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ABSTRACT

This newsletter theme issue focuses on dance, play, and movement therapy for infants and toddlers with disabilities. Individual articles are: "Join My Dance: The Unique Movement Style of Each Infant and Toddler Can Invite Communication, Expression and Intervention" (Suzi Tortora); "Dynamic Play Therapy: An Integrated Expressive Arts Approach to the Family Treatment of Infants and Toddlers" (Steve Harvey); "Attuning to the Fetus and the Young Child: Approaches from Dance/Movement Therapy" (Susan Loman); "Hopping, Jumping, Leaping, Skipping, and Loping: Savoring the Possibilities of Locomotion" (Lois Barclay Murphy); "Do Baby Boys Naturally Lead with the Left Foot?: Research on the Asymmetries of Movement Patterns in Newborns and Infants" (Mary P. Grattan and others). Additionally, the newsletter provides reviews of books and videotapes, letters to the editor, highlighted sections containing valuable information, and calls for conference papers and proposals. (DB)

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[Dance/Movement Therapy]

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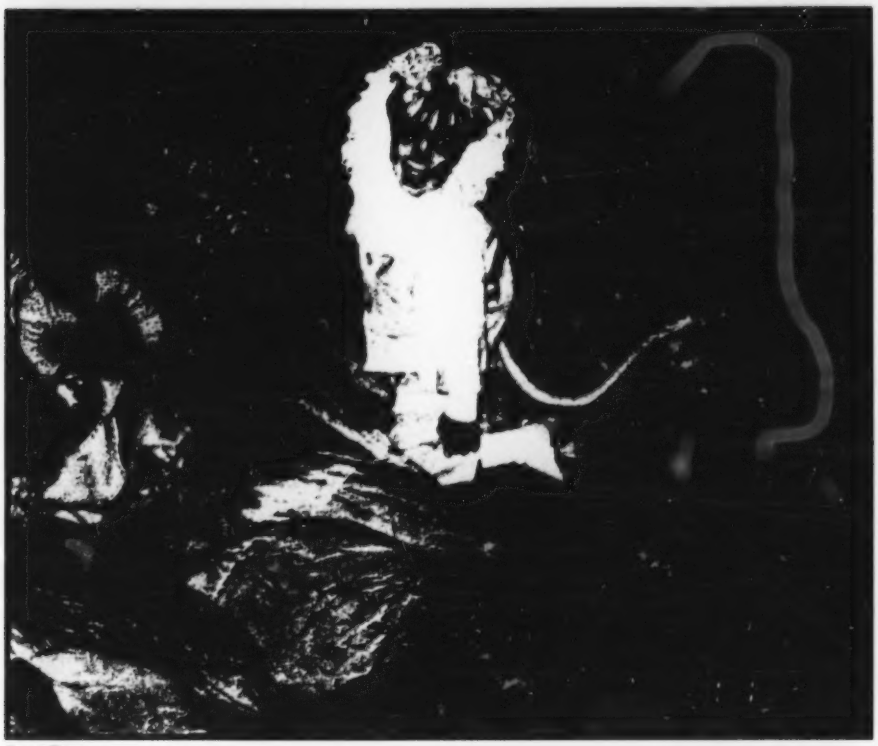
Join My Dance: The Unique Movement Style of Each Infant and Toddler Can Invite Communication, Expression and Intervention



Suzi Tortora

Suzi Tortora, M.A., A.D.T.R., C.M.A., Cold Spring, New York

Quick — quick — running, running — GO! GO! GO! — Here I come! — Back-up, forward — around and around — wiggly, leaping — BUMP! OOPS — falling down, down to the ground — STOP — shhh! shhh! S-l-o-w-l-y...s-l-o-w-l-y...one hand at a time...creep-ing...cr-awl-ing...quietly — gently — rol-l-l-ling into a ball — making self small...waiting — waiting — holding breath — stillness building — eyes widening — suddenly — BOOO! — Here I am — the body exclaims arms reaching up and out to the sky — legs jumping 1-2-3 !

Observing an energetic toddler completely engaged in a spontaneous game of chasing hide-and-seek can be contagious. It can draw us in, make us eager to join in the exuberance, to touch and remember that childhood feeling of sheer joy and freedom in moving. Children explore so much of their world through movement. Their non-verbal expressions tell us about themselves, their needs, their feelings. We can learn so much about them by watching them. Before a child develops verbal skills, we must obtain much of our knowledge about a young child's needs and wants by listening to his or her cry and watching how he or she responds to the world. During the early years, children make sense of the world through their sensorimotor experiences. From the beginning, each baby develops his or her own personal communicative dance to express how he or she perceives and experiences his or her surroundings.

Becoming attentive to the **qualities** of a young child's non-verbal cues provides a window into that child's experience, expression and development of his sense of self. These qualities include the rhythm, tempo, mus-

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cular tension, spatial pathway and amount of strength used to perform the movement sequence. Each individual's personal movement style is made up of a unique organization of these different qualities.

One of the key therapeutic techniques in the field of dance movement therapy is **observing the expressivity of the body's movement qualities**. By focusing on the essences of the body in motion, we can listen to its tune, gaining insight into how that individual organizes his or her experience of the world. Originally this field developed from dancers' own experiences with using the power and universality of dance to communicate. The drive to know oneself and to express the deepest feeling of self through the body

Since dancers and young children share an affinity for non-verbal expression, it seems natural for the dance and the young child to meet.

by using dance and movement is primal, enabling the mover to cross the barrier of language. In this way the dancer's world relates very much to that of the infant and toddler's. In the young child's world, the body is his or her first tool for containing and processing individual experiences. Through movement the infant first attempts to communicate these experiences.

Since dancers and young children share an affinity for non-verbal expression, it seems natural for the dance and the young child to meet. Dance transforms movement. Because dance is not task-oriented, as some movement is, it is the ultimate form of self-expression. Ideally, its only purpose is to enable the mover to fully engage in experiencing herself moving. As a dancer, I first brought the dance to children through teaching creative movement classes. It soon become evident to the me that as the children enhanced their physical skills and improved coordination, a deeper confidence and expressivity of self developed as well. As I encouraged children to repeat and elaborate their individual stylistic movement preferences into dance phrases, each child's personal choreography became an expression which seemed to describe his or her past and present experiences.

Experience is another element key to dance therapy technique. The dance therapist aims to help the children use their bodies through dance and movement, to express their experiences of relating and developing within their surroundings. The postural qualities of a person's movements reflect the mover's sense of self on an intrapersonal level. The way the mover interacts with his or her environment is observable in how the mover then moves within that body posturing through the spatial environment. During intervention, the therapist always looks at the child within this context of expression of self (body movement) in relationship to interaction with others (space). The dance therapist looks to see how the child has co-

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ordinated all aspects of self — motoric, sensorial, verbal/communicative, emotional, cognitive — to communicate with and to interact with the surroundings. These observations are crucial even if the movement pattern that the child displays is not synergistic or efficient for that child's total functioning, or if it is influenced by an organic developmental difficulty.

The therapist strives to understand how the child's way of relating and moving colors that child's experience. The first question I ask when observing a child in session is, "What does it feel like to experience the world through that child's particular structuring of his movements?". The second question then becomes, "How can I structure an environment that enables the child to experience his or her own way of relating and functioning while simultaneously enabling him through that experience to explore new ways of interacting with that environment?"

As the practitioners of this field watched young children grow through this way of "seeing," we felt we had much to share with other professionals. The work of several theorists and practitioners in the field of child development have especially created a lively exchange. Winnicott (1987) best reinforces my experiences as a dance therapist with infants and young children:

> The basis of all theories about human personality development is continuity, the line of life, which presumably starts before the baby's actual birth; continuity which carries with it the idea that nothing that has been part of an individual's experience is lost or can ever be lost to that individual, even if in various complex ways it should and does become unavailable to consciousness ... some kind of communication takes place powerfully from the beginning of each human individual's life, and whatever the "potential" the "actual experiential" build-up that becomes a person is precarious; development can be held up or distorted at any point ... It will be observed that I am taking you to a place where verbalization has no meaning (p.90-91).

This place where "verbalization has no meaning" is where dance therapists may enter, especially when working with the youngest children. For the raw materials of our trade are non-verbal communications. The first technique tool we use is observation; the second, sensory awareness and stimulation. Through the honed ability to observe non-verbal expression, the dance therapist can get a sense of the infant's experience. From these observations, she creates a therapeutic environment based on the infant's movement repertoire and developmental capacity. Over time, she encourages development by providing experiences which enable the child to explore more varied movement qualities which expand his or her movement repertoire.

Editor's note:

Suzi Tortora, who inspired, conceptualized, and organized this issue of *Zero to Three* observes that "from the beginning, each baby develops his or her own **personal communicative dance** to express how he or she perceives and experiences his or her surroundings." We all know that young children use movement to explore much of their world. But we must also be aware that young children also use movement to tell the world what they need and how they feel. And, particularly in the earliest years of life, it is through body movement that caregivers communicate their attunement to very young children and create what **Susan Loman** calls a "shared movement dialogue."

Since non-verbal communications are the raw materials of the field of dance/movement therapy, this field has much to offer anyone who works with infants, toddlers, and their families. In dance/movement therapy, body movement simultaneously provides the means of assessment and the mode of intervention. Observing and analyzing the qualities of a young child's movement suggests ways to help infants, toddlers, their parents, and other caregivers enter into a physical dialogue — not with the goal of helping children accomplish a task (although through this process skills will often be achieved), but rather to develop a socially, emotionally supportive relationship as a way to hear what the child wants and needs to say about his or her experience in the world and what is problematic about this experience.

In this issue of *Zero to Three*, dance/movement therapists **Suzi Tortora**, **Susan Loman**, and **Steve Harvey** discuss the theoretical foundations of their work; their methods of observation; and intervention approaches that can be used in a variety of settings in work with parents, caregivers, and young children from pregnancy onward. **Mary P. Grattan** and her multidisciplinary group of colleagues describe their fascinating and thought-provoking research on newborns' movement patterns, which are the building blocks for voluntary actions of infants, children, and adults. And **Lois Barclay Murphy**, finding, as always, precisely the right words to articulate her keen observations, shows us how toddlers and young children "savor the possibilities" of locomotion.

The dance therapy environment provides a soothing, consistent, and emotionally warm and accepting holding environment which allows the child to be directive about his or her activities and social engagement. We use the term "holding" as Brazelton did in 1974, to describe the mother's ability to hold the infant through her touch, her eyes, her voice, and her smile

as the baby's attention waxes and wanes according to his or her physiological demands and social capabilities. The initial goal in a session is to broaden the child's social and communicative base by first helping the child experience his or her movements as communications, enabling exchange and interaction with others. Embedded in this process are sensory integration activities which enable the child to experience and learn about regulating and organizing his or her sensory system.

By initially attempting organization on a symbolic preverbal level, the child begins to develop a body schema. Through this physical experiencing the child gains information about where his or her body is in space. The therapist and child explore proprioceptive, vestibular and auditory processing through physical activities that enable the child to practice putting his or her joints in a position useful for a movement task. The therapist provides emotional, tactile and verbal support. Through this process the child learns kinesthetically to organize sensations, as they relate to external, environmental stimuli. The child thus learns about and becomes comfortable with variability and versatility within the environment.

Although this process may seem similar to occupational and physical therapy, the major difference is the intent of dance therapy. We enter into a physical dialogue with children not to help them accomplish a task (although through this process tasks will often be achieved), but rather to develop a socially, emotionally supportive relationship as a way to hear what the infant wants and needs to say about his or her experience in the world and what is problematic about this experience.

Populations and treatment setting for dance therapy

Dance therapists work in a wide variety of settings, including private practice; early intervention facilities; the NICU, pre- and perinatal, psychiatric, recreational and rehabilitation departments in hospitals; day care; schools; and early parent education classes. Our roles in these settings vary from primary therapist, to teacher, to a member of an interdisciplinary team. Our approach in each of these settings also varies.

In the one-to-one setting described below, the children were referred to my private practice due to developmental delays. Often a very young child is referred by a pediatrician when the child exhibits difficulties but no definitive diagnosis has been made. Young children showing signs of, or diagnosed with, Failure to Thrive, Autism, and Pervasive Developmental Disorders often respond well to this form of early intervention. Dance therapy has also been helpful for children and infants who have undergone continuous or complicated medical treatment such as surgery, treatment of feeding difficulties, or prematurity interventions and NICU experiences. The dance therapist looks to see how infants may be holding memories of those experiences within their bodies, affecting their movement. In particular, the therapist looks to see how the child may be expressing these experiences nonverbally and how they may be affecting the child's physical, emotional and social development.

Parent/infant attachment difficulties are also a frequent cause of referral. In these cases, the dance therapist analyzes both the parent's and the infant's movement style as well as their nonverbal interactive style. The therapist will include the parent in the dance-play sessions, encouraging the parent to explore new qualitative movement interactions with the child, as the child's movement story unfolds.

As part of prenatal care, obstetricians often refer pregnant women with psychiatric difficulties such as depression or hypertension, and physical problems including low energy or back pain. The focus for these women is to learn relaxation techniques, to improve their physical and emotional awareness of their changing bodies and postural mechanics, and to prepare them for the labor and birth. A dance therapist would also help them begin to become attuned and attached to their developing unborn babies. After birth, a parent/infant activity class can help the participants to better understand their baby's unique nonverbal cues.

Dance therapy sessions occur in both individual and group settings. As one participant said, "These are dance classes with a difference." That difference is the dance therapist's attention and intention. In a session led by a dance therapist, the participants will feel good about themselves not only from the enjoyment of simply moving their bodies, but also from their enhanced self-awareness and expression.

The improvisational atmosphere of each dance therapy session supports the participant's free expressions while encouraging more social relatedness. As the child begins to experience his or her movements as a rich source, facilitating self-expression, language acquisition and social engagement, he or she also learns how to regulate his or her sensory system through body awareness and the stimulation of physical development. The knowledge a dance therapist brings from her understanding of the universally expressive qualities of dance provides crucial access to a child's body and mind. Thus, dance therapists help children experience their full social/communicative potential.

Observational approach

When I begin to work with an infant, I often feel as if the infant is taking me on a very personal journey into the wilderness, on which the infant shares with me what he or she has experienced. Along the way we make stops, try new pathways, sometimes get lost, and make discoveries. All the while, my role as therapist is to share, support and decode the child's expressions through this exploration. During the decoding process, verbalizations become important also. This brings cog-

Guidelines for observing emotional states reflected in posture and personal movement styles

Based on the Laban Movement Analysis system, presented by Suzi Tortora

Structure of body:

- Placement/movement of limbs in relation to torso
- Proximal-distal initiation
- Upper-lower body relationship
- Left to right body relationship
- Contralateral body relationship
- Pattern of breath flow
- Particular parts/areas of body individual seems to be aware of
- Particular parts/areas of body which attract your attention
- Most used parts of body during movement
- Least used parts of body during movement
- Use of body as a whole, vs. in parts
- Symmetry/asymmetry
- Place of initiation of movement

Overall sense of connection, fluidity vs. disconnection, holding throughout body in stillness and in motion

Spatial/movement qualities:

- Use of space — large/small, near, mid, far reach of limbs
- Enclosing/opening movements
- Weight shifting
- Level changes in space
- Rhythm of movement phrase — exertion/recuperation sequencing
- Sense of propulsion, locomotion, mobility, stillness, energy
- Intention, motivation to move

nitive awareness to the child's nonverbal expressions, and supports the acquisition of language as the primary communicative tool, integrating verbal and nonverbal expression most effectively. The physical experience of combining different movements, such as stepping, stamping, kicking, and running, into one sequence acts as a kinesthetic precursor to the child's ability to combine thoughts and sounds to produce language. Verbal prompting, which connects to the proprioceptive input of the movement experiences, enhances the young child's understanding and use of language.

In work with the birth-through-three population, a foundational belief must be that, as Winnicott (ibid) states, from the very beginning infants are having experiences and collecting memories about those experiences, perhaps not on a mature cognitive level, but certainly on an impression-based, sensorial level.

In his 1985 work, Daniel Stern describes how children enter the world with an emerging sense of self that acts as the primary organizing principle in the development of self and social relating:

> Infants are not "lost at sea" in a wash of abstractable qualities of experience. They are gradually and systematically ordering these elements of experience to identify self-invariant and other-invariant constellations and whenever any constellation is formed the infant experiences the emergence of organization ... It operates out of awareness as the experiential matrix from which thought and perceived forms and identifiable acts and verbalized feeling will later arise (p. 67).

I have found the image that the infant is "not 'lost at sea' in a wash" extremely useful as a way to acknowledge and respect the infant when I first approach him or her during the initial stages of treatment.

To begin this journey with a baby, the first important task is to **wait...watch...listen...and quiet down within oneself**. In this way one can become a clear receptor, open to spontaneously receiving information from the infant's movement repertoire. In my practice, I strive to perceive the child through **his or her** experience, rather than through my own bias. It is essential to try not to judge or evaluate what the child is doing, but rather, to observe openly so a relationship with the baby can develop without expectations. By paying attention to repeated movements and even to my own verbal comments and expressions to the child, themes and patterns will emerge.

Often I first observe the infant without reviewing his or her history. I listen and watch to see what unfolds during the sessions. Once I've established some ideas, I review the charts to get an understanding of how the child has been perceived and diagnosed in his or her environment, to see if and how our movement communications and the emerging themes compare and reveal this information as well.

A child's movement repertoire includes both objective and subjective aspects. The **objective aspect** concerns appropriate behavior for that child's developmental level: attention span, motoric, social, and cognitive abilities based on age. Observations are done within this context.

The **subjective aspect** involves the child's interaction with his or her environment: room, objects in the room; peers; caregivers; relationship with mother and father; and the particular qualitative movement elements used during these interactions.

Questions I ask when first observing a child are:

1. What feeling am I receiving through the child's movements?
2. What do I think the child's needs are, based on these movements?
3. How specifically does the child express his or her needs through these movements?
4. What are the parent/physician concerns about the child?
5. What are the parents' attitudes about the child?
6. How are 4 and 5 being expressed nonverbally through interactions with the baby?

As I answer these questions, patterns, elements, and qualities of the movements within the actual situation will become apparent. I am especially looking for unique stylistic patterns that occur and recur. Often, seemingly random actions, when observed more closely, turn out to be coping responses. I look beyond the immediate context of the situation to see how these elements may express deeper feelings. These recurring, stylized, emotionally expressive patterns are called **movement metaphors**. The therapist tries these movements on, matching the qualities of the action both physically and empathetically, as much as possible. This technique is called **mirroring**. It enables the therapist to experience what these actions feel like. The dance therapist then uses these patterns to create an interactional movement experience between herself and the child. So the therapist enters the child's world through actions the child is familiar and comfortable with.

Mirroring, which uses the child's movement sequence as a baseline choreography from which to improvise and build the relationship, relates to Greenspan's (1992) technique of establishing reciprocity and a two-way communication circle. This can be illustrated by the following vignettes of my work with several young children. These composite descriptions are designed to maintain client anonymity.

Nancy was born with an unidentifiable chromosomal abnormality. She was 19 months old when she was admitted to a major city hospital to be observed: recently, she had regressed from developmental milestones and had developed a chronic, idiosyncratic gesture. Nancy had begun to crawl at 13 months but had stopped by 16 months. When I examined her, she had been remaining in whatever position she was placed, and would not adjust her body or attend to a stimulus not within her immediate gaze. The gesture she continually repeated further limited her interactions with her surroundings. While sitting upright she would briskly swing her right arm across her chest over to her left shoulder. When it reached her shoulder she would hold it there while she quickly and tensely brought her left hand up in a tight fist to her mouth, biting it in a short quick beat, and pressing her left arm against her body. The nurses had attended to this action by wrapping her left hand with a cloth, and had tried to restrain her left arm when they saw her reaching toward her mouth. This intervention did not prevent Nancy from attempting this gesture; it only seemed to stress her more.

As I watched this gesture the qualities that stood out to me were the strength and emphasis that she employed to begin this sequence as she swept her right arm across her body, followed by the intensity of her biting of her left hand, which drew all her attention inward to her hand. My experience, when I tried this action on, matching these qualities, created a sense of enclosure, as if I was closing myself off from the world surrounding me. Although this action is primarily self-oriented, the gestural arcing did cause her to move through her surrounding space, which hinted at a potential for social interaction.

I began my intervention by sitting behind Nancy and placing her between my straddled legs. I wanted to support her expression of enclosure through the tactile sense of my body against hers. At the same time I did not want to create a sense of closing off the surrounding space completely, which may have occurred if I had wrapped my legs totally around her. I then placed my arms next to hers, following their pathway as they swept through the air, enclosing her. But this time when she enclosed herself, she also experienced herself enclosed within another enclosure, which was my arms around her. An interaction with someone outside of self had begun.

As I repeated this action with Nancy, I noted that the strongest accent of her movement phrase was on the first beat of the right arm swing. This beat seemed to create the momentum of the enclosing feeling. I followed this initial emphasis but added a second accented beat at the end of the movement phrase. So rather than holding her right hand on her left shoulder before the left arm came up for the next phase of the phrase, I initiated an accented opening and spreading of her right arm reaching out into the space in front of her. This change in emphasis from enclosing and holding to opening and accented continuous movement immediately got her attention. It enabled her to feel an alternative to her gesture while still keeping within its parameters. The physical experience of the opening sweeping gesture also naturally encouraged Nancy to gaze outside, beyond her immediate kinesphere (a movement term describing the space surrounding the body within reachable distance without moving away from center). As her arm reached out and around so did her head and visual focus. She twisted her body to look at me, creating a diagonal shift into her right side. She began to experiment with shifting her body weight from side to side and diagonally from her lower left to her upper right body parts. As I supported her with my hands

to explore her body transitioning through space in this way she became more attentive to her surroundings and the people within them. Her movements became more energized and she became more animated.

During the course of the next few sessions this opening action developed into other socially and physically engaging activities. As Nancy experimented with shifting and twisting her body to her right she reached behind herself onto all fours and began to crawl. The world around her now became available for her to explore again. I was now able to sit in front of her to engage in more direct eye contact during expanded movement activities.

This vignette displays how I intervened by attending to the baby's movement phrasing rhythm. The dance therapist thinks about movement phrases and rhythms as if they are the phrases and rhythms of a musical score. All movement occurs within some type of phrasing sequence involving accents, pauses, increasing and decreasing momentum and emphasis, and a beginning, middle and end of the phrase. Observation of the spatial pathways the body makes through movement phrasing reveals how and when an individual initiates and terminates interactions and relationships within his or her surroundings.

Laban movement analysis

Observing movement from this framework is part of a larger movement observation system all dance therapists study in their training program: Laban Movement Analysis. Laban Analysis is a system and a vocabulary for describing qualitative aspects of movement, based on four interrelated components: body, effort, space, and shape.

On a **body** level, the therapist looks to see what combination of body parts, whole body actions and breath, the client uses to perform the movement. Specifically, the therapist notes relationships between the central body or torso and the periphery or limbs, in the context of movement coordination and developmental milestones.

Effort refers to the qualitative changes of movement exertion, which create a feeling tone to the movement within four motion factors. Each motion factor has two opposing elements: **flow** (bound/free); exertion of **weight** (strong/light); **spatial** focus (direct/indirect); and **time** (quick/sustained).

Space refers to how individuals move their bodies in their surroundings. The therapist observes the body pathways within the mover's personal space **(kinesphere)** and the public or **general space**. Floor patterns and transitions through levels of space (high, middle and low) are noted.

Shape refers to the forms or shapes the body makes in space. These forms vary depending on they body, effort, and space combinations. Three elements comprise this component: **shape-flow** refers to changes that occur only between the body parts; **directional**

Suzi Tarbox

movement involves the arcing or spoke-like pathways the body makes to execute the actions; and **shaping** refers to the body's molding by adapting or shaping itself in relation to objects, people or surrounding space. The following vignette will further illustrate how the observational concepts of Laban Movement Analysis are integrated in the intervention technique.

Stacy was 9 months old when I first saw her in the day care setting where I was teaching creative movement. It was a full care facility servicing children from 6 months to five years. The children came from a middle to upper-middle class urban population of working parents. None of the children was known to have or have been diagnosed with any difficulties. However, as is common with this age group, some of the children were beginning to cause the caregivers some concern. Stacy was one of these children. She showed little interest in exploring her surroundings socially, visually or physically. When she was placed sitting up on a blanket on the floor she did not attempt to watch any of the activities of the children nearby or to move her body beyond her personal kinesphere. She only manipulated toys within her arms' reach and did not transition her body through different levels of space to explore her body moving. Her vocalizations were a high-pitched screech without any tonal variation or babbling. On a body level, Stacy's muscular tone fluctuated from hyper- to hypotonic and her breathing rhythm was extremely tense. These physical characteristics and her lack of social curiosity resulted in her not attracting much favorable attention from either the caregivers or other children. Most often she ended up sitting by herself for extended periods of time.

Because Stacy made so little movement through space, reflecting her lack of social engagement, I began to work with her first by attending on a body level to her breathing rhythm. Sitting close in front of her, I placed my hands on her rib cage to provide tactile support as I followed the tense manner in which she held her breath as she inhaled and barely relaxed her muscles as she exhaled. I then added a free flowing release (the opposite of the tense exhalation she was exhibiting) with a sense of sustainment on the exhale. Simultaneously I vocalized this freer breath, making a soft sound as I blew the air out of my mouth. My proximity and tactile and verbal stimulation drew her attention. Slowly, as I repeated this gentler breathing, Stacy's body tension began to decrease as she began to kinesthetically experience a softer breathing approach. Her vocalizations began to have more variation, with a more melodic tone. Her breath flow slowed and she began to focus her gaze on me. She seemed to be coming out of her inner focus to look beyond her self.

Over time Stacy's tonicity had become more relaxed. I was able then to begin to address her lack of movement initiation and spatial exploration. I played a recording of Pachelbel's Canon in D as I placed Stacy on my pelvis while I lay down on my back. As the gentle flowing tones of this music filled the air, I rocked her from side to side, enabling her to sense her body shifting weight. When Stacy was comfortable with the rocking I increased the distance of the rock so she began to feel her body transitioning in multiple spatial directions (forward, left, back, right). I gave her verbal directions, and a big smile when she came forward toward me. Moving fluidly through these new spacial orientations created a more legato tempo which opened her spatial interactional field. This posturing and movement exploration oriented her to physically sensing and visually focusing on her surroundings.

After our weekly sessions, Stacy's mother and caregivers reported that she seemed more physically active and attentive. In turn, her caregivers and peers began to pay more attention to her. As they were drawn in to the music, coming closer to watch us, Stacy eagerly vocalized and reached toward them. Stacy had acquired a greater ability to physically interact with her surroundings; a new socialization process had begun.

Use of props

The above vignettes demonstrate several of the props dance therapists use to facilitate the experiential aspect of their approach. The primary tool, of course, is the body. During dance therapy, the child physically experiences new ways to use his or her body to gain more body awareness, self-expression and enhanced social engagement. Breath awareness is an important therapeutic tool. Helping children sense the full range of their breath capacity, from shallow to deep, and its different rhythms, from slow to rapid, has been especially useful with children with Attention Deficit and Hyperactive Disorder.

Other props which encourage multisensory and physical exploration include: music of all styles and tempos; musical instruments; colorful sheer scarves; assorted sized pillows and balls; tunnels; blankets; bean bags; a fabric-covered circular rope; a parachute; art materials such as clay, sand, paper, and crayons; and dolls and stuffed animals. Older toddlers begin to integrate play and dance as these props are used within the action of the developing narrative. I use the term **dance-play** to describe this type of session, as a way to emphasize the personal choreographic element of the child's play, which the dance therapist looks for and analyzes. For example, when dolls are used in the dance-play narrative, the therapist watches how the toddler plays with the doll. Does she rock it tenderly close to her body? Or is she tense, pulsing back and forward, almost throwing the doll off her lap with each rock? Where in the treatment room does the child tend to play most and how much space does she or he use to play? Does the dance-play story take the child traveling freely throughout the room or does the child tend to surround him- or herself with the chosen toys within a confined space? These variables all demonstrate different ways a child reacts to and interacts with his or her surroundings. When the therapist considers these questions within the context of the child's total emotional social profile she may glean pertinent information about how the child organizes his or her experiences.

Z and his mother: Movement interactions as a reflection of a relationship

I have included the final vignette because it was one of the first studies that got me excited about studying parent-child nonverbal interactions. It clearly demonstrates how the quality, tempo and spatial aspects of a parent's and child's separate movement styles reflect their bonding relationship and can influence the child's style of relating with others. This abridged version of the movement profile of each member of the dyad and the intervention in dance therapy clinical terms should give readers a taste of a more detailed movement analysis. I hope it will stimulate you to try this new way of seeing with your own cases. The descriptive analysis of this child's and mother's movement repertoire was observed on videotape and in live movement interactions when the child was 2 1/2 - 3 years old.

My participation in this case was as a caregiver in a multi-aged group care setting. My colleagues and I described our work in detail at ZERO TO THREE/National Center for Clinical Infant Programs' 5th Biennial National Training Institute (12/87) under the title *Peer relations as one of several interventions for a failure to thrive infant: issues and implications for practice.* This excerpt

describes my work with this child in the group care setting. The following year, this child and his mother continued to work with me in private therapy.

Early history

Z. was diagnosed as failure to thrive at age 6 months. He was born full-term through a breech delivery with a birth weight of 5 lbs. 5 oz. From birth, feeding was always a problem due to colic, and low muscle tone created difficulty swallowing. An allergy to milk products was suspected. However, the organic and/or nonorganic contributions to this failure to thrive condition were not clearly delineated. Nine to twelve-month delays in motoric, language and social development were found.

Z's movement pattern

Z. was able to move his body in homologous (an upper to lower body orientation), homolateral (a left body half to right body half orientation), and contralateral (an upper left to lower right and vise-versa criss-cross orientation) coordinations. However, his movements most often exhibited an alternating use of his left to right side, emphasizing homolateral body connections. Z. displayed this tendency by continually manipulating objects, switching them from his left to right hand. In momentary pauses, he would extend his left arm up and out into space while dangling his right arm or holding it down at his side. This pose often preceded a frequent spinning action, which he performed by swinging his left arm and leg around his body, creating a vertical axis from which he rotated in a complete circle. Z. used the right side of his body as stabilizer, the left as mobilizer. This spin always occurred in a clockwise direction.

Z.'s movement tendencies stressed the upward aspect of the vertical dimension without a downward counterpull. Thus, on a body level Z. often appeared to be "floating in space," which was exaggerated by his tendency to toe-walk. Such a posture accentuated Z.'s orientation to the upper areas of space. Contact with lower areas of space occurred only when Z. would spiral his whole body down through space, curling and rolling himself on the floor. This transition would occur in seconds, followed by an equally quick transition back up and running.

Without a postural kinesthetic connection to the group, Z.'s movements in space at first glance often appeared to lack a sense of direction or spatial intent. However, by observing Z.'s pathways and his phrasing in space qualities, I noted a definite pattern. Often, Z. would retrace pathways to certain areas of the room several times within the hour. I noted that Z. took these same pathways each day. The salient characteristic of these pathways was that they alternated from movement toward the center of the room or a person, to movement toward the periphery, away from the center or a person.

Thus Z. exhibited a movement dance characterized by moving toward and then breaking away from physical contact with his environment. Such phrases were marked by sudden bursts into space via an extension of his left arm or an ejection of his whole body as he darted across the room. At some point a spin might emerge within the action, or the action would stop because Z. came in contact with a wall (a peripheral surface). There was often a resilience to his phrasing quality; it was characterized by pulsing accented, quick lively movements, which merged into "timeless" pauses during which he held his body very still as he gazed off to a mysterious, private place. His movements appeared to be directed by an inner tune filled with surprise reversals in mood and tone.

When I started to observe his mother, S., during drop-off and pick-up times, Z.'s movement style began to make sense.

Mother's movement patterns

During the particular interaction to be described, S. was bringing Z. into the classroom and giving him food. To begin, S. initially attempted to carry Z. over the low door. Z. refused, making his body limp. S. left him at the door, turned away from him and climbed over herself. She walked away from Z., placing some items on a shelf behind the table. She then returned to Z., opening the door to encourage him to come in. Z. entered while S. was acknowledging other children. She redirected her attention toward Z. by picking him up and placing him in the high chair. She then turned away again and returned shortly, placing food items near Z. She began to crack an egg and empty it into Z.'s bowl, but stopped to turn around and get a spoon. She went back to the egg, which Z. had begun to eat, and then changed her focus again by walking away to throw out the shell. She momentarily returned, stroking Z.'s head, and then turned away again to get juice. Z. continued to eat the egg while staring out into space during this interaction. There was little eye contact between them throughout this time.

S.'s movements were all characterized by a nonmetric start and pause pulse, featuring many initiations of contact without always a complete conclusion to the phrase before a new beginning was initiated. Her sweeping gestures often had momentary to extended pauses in midspace. The emphasis of these gestures occurred during the initial movement exertion. She concluded these actions by releasing the pause and either dropping the hand in abandonment or redirecting it in an opposite direction, beginning the cycle again. Therefore, a clear complete ending to each phrase did not exit.

At first glance the above description of their interaction appears not to involve reciprocal dyadic dialogue. However, careful analysis of their movement styles did reveal an established system of relating. The communicative dance between Z. and his mother was

about coming and going, connecting and unconnecting, attending and withdrawing. However, their manner of relating did not provide Z. with the ability to learn how to self-organize (Brazelton, 1974) that would facilitate his ability to relate to his environment in a universally understood manner.

Given the movement characteristics of Z.'s mother, one can conjecture that her holding framework did not act as a "container" for Z.'s attention and withdrawal patterns. During a verbal interview, paraphrased here, S. did reveal to me that she had difficulty attracting Z.'s attention as an infant:

I never knew what to do with him...he did not respond to me much...he used to stare off into space a lot and he didn't move much...I felt stupid with him...when I fed him he seemed so uncomfortable...he would contract his chest muscles pulling his shoulders up and tense his neck....

It is important to note here that this inability to provide a holding framework reflects not poor mothering but perhaps mismatched temperaments (Tronick, 1986). This mismatch is perhaps further complicated by Z.'s sensitive homeostasis (Greenspan, 1981). Given this information, one begins to wonder what Z.'s early experiences felt like to him.

Z.'s process of organizing his experiences, which involved stressful contacts during eating, long periods of no contact, and/or abrupt stop-and-go contact, seemed to create a tension build-up into a release. Z. needed to recuperate into himself after these powerful interactions with others. This is exactly what his movement profile shows. His interactions with his surroundings are characterized by cyclical approaches and withdrawals of closeness to activities (or people), marked by momentary extended periods of self-oriented stimulation through spinning around his center, rolling on the floor, bumping into walls, or staring out into space as he stands on his toes. All these techniques are significant in their full body physicality. Z.'s upward vertical orientation to space did not provide a kinesthetic sense of weighted presence; thus, Z. needed to learn to use his whole body to create a physical sense of self.

These movement tendencies display the nonverbal manner in which Z. had internalized defensive coping strategies (Tronick, ibid). These defensive patterns are observed in Z.'s tendency to accelerate his tempo, often spinning and darting around the room after contact or the suggestion of contact with others is presented to him. It is this quality of his movements which reveals Z.'s true character: this is the nonverbal method he has developed to communicate with his surroundings. Z.'s communicative style seemed to be based on the interactive system established between Z. and his mother.

Intervention strategies

I first approached Z. by responding to his movements within the large general space, rather than responding to his personalized body-oriented movement qualities. As stated earlier, these body level qualities reveal one's internal orientations and sense of self. By responding to his manner of moving in the surrounding space, I could affirm his external relationships, providing him with respect and the freedom to control his intrapersonal self.

During our initial movement experiences together, Z. would send us sailing through the room with speed and agility as we'd quickly change positions in space, floating high up on our toes as if weightless and airborne, to rolling on the ground, sensing the hardness of the floor against the surfaces of our bodies. Soon the running became a game of Follow- the-leader-catch-me-YES-you-can! Z. would run to a place across the room and wait with anticipation, smiling and hopping on his toes as I ran toward him following the path he had made. I would create a clear ending to this sequence by giving him a hug when we met. The firm tactile stimulation provided a support as well as a sense of boundaries through a distinct movement phrase ending, as he gained a new kind of kinesthetic awareness about self and other. Physical and mirrored interactions stressed Z.'s vertical homolateral movement patterns. At the same time, we stimulated Z.'s awareness of the downward vertical pull through such activities as jumping, and using strength to push his feet against my hands while lying supine, alternating feet as we counted to ten and then held this pose for a beat or two. We experienced running, rolling, jumping, and spinning within the confines of Z.'s spatial phrasing patterns — requiring us to continually make and break contact. However, even during lapses of actual contact, I provided Z. with a holding framework through my verbal recognition of Z.'s whereabouts; eye contact; putting on music that I knew he liked; or mirroring the movements he was performing from a place parallel to him (which could be across the room).

This created an environment which constantly invited interaction within an orientation familiar to him. Once our relationship was established, I began to involve Z.'s peers in our interactions. As Atkins (1983) discussed in his article about peer relatedness in the first year of life, peer interactions may very well significantly help stabilize a child's sense of self-representation. Although Z. continued his intermittent involvement, with the presence of a trusted adult who could act as a catalyst for his communications his expressions were integrated into the group activity, facilitating Z.'s participation. His characteristic rhythms were added to group dances and songs and his movements were followed during turn-taking sequences with others.

By following and responding to Z.'s cues through our movement exchanges, we demonstrated a respect for an interactive regulation of his internal processes. Over a period of nine months, this approach enabled Z.

to experience synchrony, reciprocity and the repair of mismatches (Tronick, ibid). This intervention encouraged Z. to develop positive coping strategies as he began to experience more rewarding social interactions with peers and adults. These interactions seem to enable the formation of new emerging organizational experiences. As Stern suggests (1985), because such matrices catalyze ongoing affective appraisal of events, these new experiences played an important role in Z's sense of self as he related to others in his environment.

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Dynamic Play Therapy: An Integrated Expressive Arts Approach to the Family Treatment of Infants and Toddlers

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The father of a very securely attached little boy recently told me about the jumping game that he and his son developed and extended during the boy's first two years. During the boy's third and fourth months, the father would begin bouncing his son as the boy bent his knees — to the baby's great delight. Throughout the next several months, the boy began regularly to "ask" for this game by crawling over to his father and placing himself in the "jumping" body position. Later he would place his father's hands on his own waist, and during his second year, the boy would gesture and babble to indicate his desire to start the game. When, as a toddler, the boy would run away from his father during chase games, he would raise his arms when he was ready to be "caught" and lifted. The father, of course, played along, and both father and son thoroughly enjoyed what became a rejoining or reuniting "dance" when the father returned from work. Through repetition and development over the years, the jumping/lifting game was full of meaning, even though no words were used. It was a way for father and son to generate, express, and remember their positive feelings for each other.

Dynamic Play Therapy is an intervention style which encourages parents and children to engage in mutual expressive activities. This approach involves an integration of movement, dramatic games, art activities, sound- and music-making, and video-making. Its goal is to help parents and children experience more creativity and flexible expressiveness in their daily life, and to develop meaningful metaphors that reflect difficult issues (particularly those concerning intimacy and attachment) and emotions in their relationships.

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Dynamic Play Therapy techniques are helpful not only in work with birth parents and their children, but also with infants and toddlers who have been abused and are now in foster care or adoptive families.

Dynamic Play Therapy builds on Bowlby's (1982) conceptualization of attachment as the psychological and emotional relationship that develops between a parent and child and is characterized by parents' ability to provide a sense of security for their young children. Parents foster secure attachment in part by meeting their children's nonverbal expressions of distress in a sensitive, attuned, and contingent manner — often through nonverbal, emotionally and physically matched interactions. The successful practice of Dynamic Play Therapy also incorporates concepts of interactive mismatch and repair (Tronick, 1987), affective attunement (Stern, 1985), mirroring (Kohut, 1971), and previewing (Trad, 1992).

The Dynamic Play approach emphasizes the playful interaction between parents and children. It assumes that healthy, secure parents and children will generate dances, drawings, turn-taking dramatic games, and videotapes easily and with pleasure. Expression builds from the interaction, and small interactive problems are solved easily through creative and imaginative negotiation. For example, a young child who playfully runs off, distancing herself from her parent, might spontaneously become a bird in search of a nest who, returning to her parent's lap or "nest", expresses joy with her entire body. As early as the second year of life, children attentively watch videos of themselves and their parents playing with pillows, gymnastic balls, and scarves; then they repeat and elaborate on their past enactments with pleasure.

As a therapeutic approach, Dynamic Play Therapy uses movement, art, and interactive games to identify expressive mismatches between parents and children who have difficulties with intimacy, attachment, and emotional expression. As suggested by attachment theory, the goal of Dynamic Play Therapy is to help parents generate security; to help children produce organized behavior which shows both exploration and return, related to their own internal needs; and to help both parents and children experience trust, leading to pleasure in their relationship.

Dynamic Play Therapy uses various expressive forms to help parents and children generate positive behavior during the actual experience of play, so that they discover their own natural creativity in a context that encourages the enjoyment of mutual, spontaneous, uninhibited expression within their relationship. Parents and children create new experiences together. From these new experiences, which generate significant, positive feelings between parents and children, families begin to understand what positive change, leading toward increased attachment, might feel like for them.

Some of the theoretical models and intervention techniques involved in the expressive arts therapies are similar to those of other parent-infant therapies that involve coaching, generating playful experience, video review, enactment, and encouraging reciprocity. However, Dynamic Play Therapy differs from other approaches in two significant dimensions:

- a much enlarged use of physical engagement for both parents and children; and
- an emphasis on spontaneous creativity in moment-to-moment playful expression.

While most, if not all, parent-infant intervention utilizes the concept of a parent being able to follow or mirror the young child's nonverbal gestures and expressions, the expressive arts approach emphasizes the use of a parent or child's whole body expression, whether in following or in turn-taking activities.

Techniques of observation and intervention

In order to encourage large-scale physical interaction, Dynamic Play Therapy is usually carried out in a large room furnished with attractive large props. This context encourages a much wider range of interactive movement possibilities, including the use of all limbs, large locomotive movements (such as running, crawling, climbing, and movement through space), as well as movement on all levels — from crawling on the floor to jumping and swinging in the air. With these resources, a movement interaction between, for example, a very withdrawn toddler and his parent might cover the range from matching finger games, to the parent and child rolling together across a large expanse of floor, to crawling together underneath large parachutes.

Large foam pillows in various shapes are especially helpful in organizing mutual movement. Rectangles, squares and cylinders are used to build houses (which are sometimes knocked down), walls (to be crawled over or under), and "lands." Heart-shaped pillows five feet across can be used to represent Mom's or Dad's Land or Heartland. The pillows' softness helps to channel even children's most energetic movements into activity which is potentially more interactive. The large hearts and other pillows can also be used to rock and soothe children towards the end of sessions.

Parents and children use large gymnastic balls, stretch ropes, and stretch blankets to pull towards and away from each other. Large brightly-colored scarves and life-sized stuffed animals also stimulate creativity and dramatic play with children, especially with children over two.

The large scope of Dynamic Play Therapy also facilitates dramatic enaction (any interaction which involves turn-taking or the use of role, even in nonverbal activity). For example, a young toddler dealing with issues of object constancy might run across the space and hide from her parent under several large pillows,

while the parent takes on the role of finder. Enlargement of the scope of such games helps in the identification of difficulties in role examples in interaction, as well as in finding new role possibilities. An example of mismatching roles occurred in dramatic play between an adoptive mother and her two-and-a-half-year-old boy. The boy had experienced significant physical abuse prior to entering his adoptive placement. In a play episode, this boy would repetitively crawl on top of a large dog and fall off, playing that he was hurt. The adoptive mother kept encouraging him to continue his initial story, without acknowledging his fall. Clearly the boy was taking a role of "being hurt," while the mother's activity of watching and urging him to continue his story didn't match. The mother was then coached to catch and help the boy "rider," first "nursing" him back to health and then "teaching" him how to ride safely.

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It is extremely helpful to have a video camera and monitor available to capture interaction and immediately feed this back to both parents and children. I have found children as young as 18 months to be extremely interested in such visual feedback of their interactive play.

The expressive arts therapies emphasize creativity in interaction. In people of any age, creativity involves a curious engagement with the environment, intrinsic enjoyment in expression, and pleasure in attempts at mastery. Such curiosity can occur in interactions as well. The creativity of young children is easily recognizable: toddlers begin to dance or sing and engage in scribbling or mark making; two- and three-year-olds engage in imaginative role play. But even young infants can be creative in their playful use of variation in interactive games with their parents. Emphasizing creativity, the Dynamic Play therapist attempts to go beyond simple face-to-face activity or mirroring of body parts.

In Dynamic Play Therapy, parent-child activities include both therapist-directed games, to help promote coordinated interaction, and free play. All activities are designed to produce interaction in which parents and children match each other in complementary ways. Therapist-directed activities include games, such as face-to-face play; swinging the child, sometimes to produce an excited state between children and parents, sometimes for soothing and calming down; playing peek-a-boo with the large scarves; and playing hide-and-seek using the large pillows. In free play, parents are coached to help set the structure of the activity, and then to follow the child's lead throughout the room — swinging, hiding, falling, and rolling over pillows are common activities. Drawing activities (scribbling on newsprint, drawing outlines of body parts or full bodies) and dramatic play (especially with stuffed animals) also produce interaction.

Natural creativity and "breaks"

Natural creativity in interaction can serve as an ongoing resource to help build or rebuild relationships between parents and children. It is useful to think of certain aspects of a parent-child relationship as an improvisational dance or drama, in which one partner's nonverbal expressions stimulates the other partner's expressions, by eliciting a creative response. In healthy relationships, the natural creativity within a parent and child keeps their "dances" moving from gesture to gesture, facial expression to facial expression, etc. One partner's expression stimulates and moves the other, in a pleasurable, problem-solving flow that generates good feeling. This natural creativity can be thought of as the magical "it" of a relationship, in which parents and children fill out and continue their emotional expressive experience with each other from moment to moment.

From this perspective, children and parents with problems in their attachment might be thought of as experiencing breaks in this ongoing creativity. The gaps created by their mismatched expressions become so great that mutual creativity stops. Expressive arts intervention, then, helps parents and children become aware of and use their natural curiosity within creative responses to each other as they occur in the moment, during mismatches. This style of intervention attempts to help parents and children engage or re-engage with each other in activities which generate creative mutual responsiveness. The goal, in other words, is to help restart an ongoing improvisation that has stalled.

The following case vignette illustrates the use of enlarged physical engagement and emphasis on natural interactive creativity.

Renee and Sam

Renee was a 22-year-old woman who had been diagnosed with schizophrenia at the age of 16. Throughout her young-adult years she had complained of hearing voices that told her to kill herself or her boyfriend. By the time Renee was 22, she was able, with proper medications and support, to work part-time and was living with a constant male companion. During this period she gave birth to Sam. Sam was seven months old when Renee began creative arts therapy. She was also in ongoing follow-up treatment with a psychiatrist at a local mental health center.

Renee was seen initially in individual dance/movement-oriented sessions. She would begin her sessions by describing some of the events of her life and then, together with the therapist, would design physically-oriented activities to address the conflicts in a metaphoric way. During these sessions, Renee reported that throughout her early and mid-adolescence, she had been repeatedly assaulted sexually by an uncle. This information was important, as body boundaries, feelings of trust, and feelings of overwhelming fear in relationships with others became major issues addressed in individual sessions through movement improvisation involving physical play metaphors.

After approximately two months of individual treatment, Renee asked if she and Sam could be seen together, as she was having some difficulty caring for him. Sam had begun to crawl and was becoming quite difficult for her to manage. When Sam was eight and one-half months old, he and his mother began several months of weekly sessions. Renee continued weekly individual movement-oriented sessions as well.

When Renee had first begun dance/movement therapy, she was a slightly overweight, lethargic young woman who showed very little animation in her facial or gestural expression. During initial sessions, she rarely moved her hands or arms away from her body. Because she showed very little rotational movement in her shoulders, hips, or spine, her movement had a very one-dimensional quality.

When Renee was first seen with Sam, she held him awkwardly. Because of her rigidity, Renee could not mold or adjust her shoulders, arms, or spine to offer Sam a comfortable place for his body to be in her arms or lap as she picked him up. Mother and son showed little face-to-face activity. Sam presented as a quite energetic and reckless little boy who used locomotive behavior (crawling, and later walking) to move rapidly away from his mother, rarely returning to her. Because of his quickness, he was constantly bumping into furniture and walls and falling down stairs with much greater frequency than other infants. Renee talked about her difficulties caring for Sam. She said that the more energetic he became, the more lethargic she felt and less motivated to protect and contain him. Clearly, this mother and son showed several significant mismatches in their nonverbal interactive style and emotional communication with each other. Moreover, this situation was producing a potentially dangerous situation in the home as Sam negotiated his environment with little adult protection and/or interaction.

Intervention

In her individual sessions, Renee and the therapist began with activities in which she could instruct him verbally where to move in space, then show him with gestures involving her hands and then arms, and then use full body movement. Next Renee and the therapist began to move in the room together. Renee used both verbal and nonverbal communication to control the therapist's distance from her. As sessions continued, Renee became quite animated and began using her arms and torso actively and spontaneously. The therapist responded in a complementary fashion. As sessions progressed, Renee began to enjoy these activities, especially moving simultaneously with the therapist. Mutual dances began to continue for 20 or 30 minutes, as Renee became quite creative in using her body to influence the interaction between herself and the therapist. The goal of spontaneous dance-making was to increase Renee's movement initiation, while the therapist matched his response to hers.

Interactions were extended with props. Renee and the therapist placed large pillows between them, moving the pillows across large spaces at different speeds and body levels while leaning into the pillows with their weight. The pillows represented various issues in Renee's life, finally coming to represent cooperation between Renee and the therapist in raising Sam.

In these activities, Renee needed to actively engage her weight, spine, and all of her major joints, responding creatively, spontaneously, and in an ongoing way to the therapist. This was important because Renee was now *feeling* her body rather than exhibiting the protective, defensive, non-moving response that may have been a result of earlier boundary violations and molestation. The pillows may have been a metaphor for a buffer between Renee's self and the outside world, which helped her to move more easily, and with full body weight, through space. The therapist, for his part, followed Renee's physical initiations sensitively and contingently. For example, when she would initiate a light use of weight by leaning on the pillow, he would merely match it; when she began to initiate more joint movement, he would respond to that in the moment.

When Renee first brought Sam to sessions, he would crawl away from her quickly, and Renee would simply sit watching him, apparently exhausted. Renee described this exhaustion as coming from her many efforts to hold or "contain" Sam. Sam, for his part, be-

gan crawling away from Renee as soon as he could wiggle his body down to the floor. Once away from his mother, Sam moved away quickly, without looking for Renee at all. The therapist and Renee then decided together to pile pillows in a circle approximately six feet in diameter, so that Renee could keep Sam in a range where she might actively try to engage him. As Sam would approach the pillows, Renee could follow behind him. Renee and Sam spent several sessions falling into the pillows. The interaction was now clearly a game of chase and catch (as Sam may well have wanted all along). Both mother and son began to laugh together, sharing positive emotional exchange for the first time.

Gradually, the game enlarged. Sam began to climb over the pillows, but Renee was able to catch and hold him while rolling down one side or another of the pile. Like the initial chase and catch game, the rolling produced much enjoyment, mutual laughter, and many variations over time. Interestingly, in the rolling, Renee was able to adjust her torso, arms, and weight to hold Sam — much different from the awkward holding observed earlier.

Individual and parent-infant treatment continued for approximately 10 months. At that time Renee and Sam began to engage in long periods of interrupted pleasurable play together, including spontaneous improvised games of chase and following each other throughout the room. In such activity, when Renee would stop, fall, or change direction, Sam would follow or initiate his own movement ideas to which Renee would then respond. Such give and take generated laughter and other expressions of joy between mother and child. Sam became far more interested in his mother and Renee found her time with her son more relaxing and energized. In her individual therapy, Renee developed more ease in her improvised movement play as well, as she no longer introduced themes related to her past molestation and victimizations. Rather, in both individual and parent/child therapy, Renee introduced play which was responsive to the present moment, freely developing movement play related to the props in the room, her present "in the moment" body feelings, or her son's interests. Significantly, this style of play began to offer both Renee and Sam opportunities to express emotions in response to each other in a spontaneous way, and such spontaneity provided the energy to keep them engaged with each other in a natural, easy manner.

Jen and Johnny

Much of the author's longtime practice has involved helping foster and foster-adoptive families create attachment relationships with young children with histories of neglect, abuse, and multiple separations and placements. Many of these children are referred because of problems with emotional constriction, nightmares, inability to accept soothing from foster caretakers, and excess aggression and/or withdrawal.

Jen brought her adopted son, Johnny, for parent-child treatment when the child was 10 months old. According to social service records, Johnny's birth mother had attempted to abort him by taking an overdose of cocaine. Johnny was born two months prematurely, showing signs of cocaine addiction. He was taken from his birth mother at the hospital and placed in two foster placements before finally arriving at his adoptive home.

At 10 months, Johnny was extremely clingy and continually distressed. Jen reported that she was exhausted; she could go nowhere by herself without Johnny holding onto her leg. He could not tolerate any separation and would let only Jen hold him. However, even being held did not soothe Johnny or calm him down.

During their initial session, Jen sat primarily in one position, without bending or shifting her shoulders, face, or back to match Johnny's movement in any way. She seemed to be physically very uncomfortable and very tense even being on the floor with her infant. Johnny was actively crawling around her. At one point, the therapist asked Jen to move approximately 10 feet away from Johnny, who then became extremely disoriented and unable to locate his mother. At this point, he began to crawl in the opposite direction, got lost, and became extremely distressed. Although Jen was able finally to calm him down by holding and rocking, this effort took quite some time, and Johnny and Jen were not able to generate any further interactive play.

Clearly, the breaks in interaction included Johnny's inability to tolerate any separation without becoming extremely disorganized and anxious. Such anxiety interrupted active search behavior. Jen, meanwhile, was not using energetic interactive play to help Johnny remember or orient to her position in the room.

The therapist used a large balloon, which Johnny could activate with very little effort, as a prop to capture his attention. As Johnny reached for and touched the colorful balloon, it would move immediately, capturing Johnny's interest in a physical way. Gradually, as the balloon play between the therapist and Johnny became more coordinated, Jen was encouraged to extend and enlarge the scope of the play by reaching out, changing levels, and leaving her basic sitting position. At first, Jen found this exhausting rather than relaxed and easy. But as she began to extend herself more with the balloon play, Jen was able to accept Johnny's efforts with more enjoyment. A parachute was used to rock Johnny so that he could maintain eye contact with Jen. At first, Johnny had difficulty relaxing in this activity, but when peek-a-boo was added to the rocking, he was able to laugh and seek out his mother's face while being soothed at the same time. As Jen's and Johnny's repertoire of activities grew and became more self-sus-

taining, Jen reported that Johnny was able to separate more easily from her and was becoming far less anxious and clingy. His sleeping also improved.

Susan and Alice

Susan brought her adopted two-year-old daughter, Alice, for treatment because the little girl could not be soothed, was showing aggression towards other children in the house, and had difficulty separating from her mother. At the same time, however, Alice openly rejected Susan's physical advances and efforts to hold her, arching her back when she was held. In initial sessions, Alice showed extreme tantrum behavior when Susan attempted to leave the room. Alice did not speak but was extremely controlling throughout the interactive play, grasping and screaming at Susan. While Susan was generally patient, she clearly was frustrated.

The therapist and Susan began together to rock Alice on the large, soft heart-shaped pillow. The therapist chose this activity to help Alice experience physical softness close to her body while being rocked gently. Alice initially resisted this, and showed some tantrum behavior. Then the therapist and Susan began to roll Alice gently back and forth between the two of them, until Alice was able to roll from the therapist's arms across a lifted pillow into her adoptive mother's arms. Although Alice could tolerate this activity for only brief amounts of time in early sessions, she soon came to enjoy it and asked for it eagerly with gestures and babbles during her sessions. Alice and Susan also began scribbling together, with Susan matching Alice's style and energy level in drawing. A final activity involved Alice moving freely throughout the room with Susan following as closely as she could. Alice then began to fall on the pillows, enjoying it when Susan would fall next to her. As had happened with Renee and Sam, this activity became a game of "chase and be caught."

Over a six-month period, Alice became much more open to Susan's holding overtures and began to seek out holding at home. She was also able to be comforted, and her tantrum behavior decreased significantly as her language increased. Alice's increasing curiosity and creative, fun-filled exploration and enlargement of activities in therapy sessions were accompanied by growing enjoyment of relationships at home. More specifically, Alice began to show active and spontaneous use of shaping behavior, adjusting her body to match Susan's holding gestures in a soft way, matching the rhythms of gestural movement to Susan's expression, eye contact, and relaxed, responsive participation in game-playing with her adoptive mother. Two years after the beginning of treatment, this adoption is proceeding positively and without incident, despite its having been viewed as at high risk for disruption because of Alice's earlier behaviors and inability to form relationships.

Bill, Gail, and Ben

Bill and Gail, the foster-adoptive parents of Ben, brought this 26-month-old boy for treatment because he was being excessively aggressive toward other children in the home. Aggressive outbursts included biting and pinching. Ben had difficulties being soothed and in sleeping. During the intervention period, Ben was supposed to be seeing his birth father weekly. However, the father was extremely inconsistent, and after a missed visit, Ben's aggression and moodiness would increase significantly for several days.

Ben was seen with Gail and Bill on alternating weeks to accommodate their work and child care responsibilities. Interestingly, the initial breakthrough in play came in a session when Bill was instructed merely to follow Ben through the large playroom. Ben moved quickly from wall to wall, but as soon as he realized his adoptive father was following him, he initiated several games, such as crawling through the pillows. Coaching helped Bill turn this game into hide-and-seek and a version of peek-a-boo, much to Ben's enjoyment. These games developed over several sessions. For example, the therapist would make a house for Ben and a house for his father out of pillows. Both father and son would go in and out of each house easily and also knock them over in their play.

These play episodes were videotaped, and Ben and Bill were instructed to watch the tapes throughout the week. Ben became extremely interested in the tapes and would ask repeatedly for "his movie," which he would watch attentively for episodes of several minutes over many hours. Ben's increasing curiosity and engagement in play sessions suggested that the tapes may have helped him to focus. The tapes were particularly useful when Ben's birth father had missed a scheduled visit. When the foster-adoptive parents played the videos for Ben, he was able to watch with interest and then begin to engage in positive play with them, rather than exhibit his previously typical tantrum behavior.

Several years after treatment, Ben has been adopted by Gail and Bill, and his aggressive behaviors toward other children have become almost non-existent. Ben still enjoys watching his movies occasionally.

Summary

Healthy parent-child interactions can be thought of as improvisational dances and dramas. These interactions produce a motivated flow of active expression, which rises and falls to match internally felt emotional impulses. Dance/movement, art, drama, music, and video techniques can help parents engage creatively and positively with their young children. Creative arts therapists observe how interactive play emerges between parents and children and notice breaks and deviations within it. Therapeutic intervention then works to re-engage family members in game-like activities which generate curious, playful, creative interaction.

While many parent-infant intervention styles make use of activities and video, the creative/expressive arts therapies offer two unique contributions to the field of parent-infant psychotherapy. First, when parents and children make use of their whole bodies to move through space, using multiple levels of locomotion and an enlarged movement repertoire, their physical, artistic, or dramatic interactions seem to generate an "expressive momentum" which creates new, positive experiences. Second, building on naturally occurring motivation, curiosity, and mutual enjoyment helps parents and children who are experiencing difficulties in their relationship create engaged, playful exchanges in the therapeutic setting. As these are repeated and elaborated upon at home, the style of playful give-and-take of these parents and children comes to resemble the spontaneous, joyful interaction of healthy parents and children.

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What is Dance/Movement therapy?

Dance is the most fundamental of the arts, involving a direct expression of one's self through one's body. It is an especially intimate and powerful medium for therapy. Based on the assumption that body and mind are interrelated, dance/movement therapy is defined by the American Dance Therapy Association as "the psychotherapeutic use of movement as a process which furthers the emotional, cognitive and physical integration of the individual." Thus, dance/movement therapy effects changes in feelings, cognition, physical functioning and behavior.

The dance/movement therapist focuses on the movement behavior as it emerges in the therapeutic relationship. Expressive, communicative and adaptive behaviors are all considered for both group and individual treatment. Body movement simultaneously provides the means of assessment and the mode of intervention.

What do Dance/Movement Therapists do?

They work in hospitals, clinics, rehabilitation facilities, nursing homes, senior centers, and special schools with a wide variety of clients; they conduct individual and group sessions and collaborate with members of the professional staff; they use movement observation skills as part of a research team; they train other professionals to understand movement as communication and expression; and they consult with community leaders in recreation, education, and mental health.

What kinds of work experience would be helpful for a future Dance Movement Therapist?

Dance teaching of all kinds with all age groups, performing, choreographing, and working in human service professions such as recreation, teaching and social work.

What undergraduate preparation should one have?

Extensive dance experience and a liberal arts background with coursework in psychology. For specific prerequisites contact each graduate program.

What degree do Dance/Movement Therapists receive?

Professional training is on the graduate level. Graduates receive a master's degree in dance/movement therapy. Graduates from an "approved" dance/movement therapy program are eligible for a D.T.R. (Dance Therapist Registered).

What does approval of graduate programs mean?

An approved program has met the basic educational standards of the American Dance Therapy Association.

What does D.T.R. (Dance/Therapist Registered) mean?

It signifies to the public and professional communities that an individual is prepared to practice dance/movement therapy in a clinical, educational, or rehabilitative setting.

Can one receive a D.T.R. with a Master's degree from a related field plus Dance/Movement Therapy coursework?

Yes, there is an alternate route which requires a master's degree, specific dance/movement therapy courses and supervised internships. For further information write to A.D.T.A., 2000 Century Plaza, Suite 108, Columbia, Maryland 21044, for materials on the alternate route D.T.R. requirements.

What does A.D.T.R. (Academy of Dance/Therapist Registered) mean?

This is the advanced level of registry, signifying that an individual has the education and experience to teach dance/movement therapy and to supervise interns.

Approved ADTA graduate programs in Dance/Movement Therapy

ADTA approves programs that meet the requirements stated in the ADTA standards for Graduate Dance/Movement Therapy Programs. Graduates from approved Dance/Movement Programs meet all professional requirements for Registry (DTR Level).

For further information about financial assistance, prerequisites, housing, etc., please write to each college or university.

Antioch/New England Graduate School. 103 Roxbury Street, Keene, NH 03431. Telephone: (603) 357-3122, Ext. 222. Masters Program in Dance/Movement Therapy, Department of Applied Psychology. Susan Loman, M.A., A.D.T.R., Director.

Columbia College, Chicago. 600 South Michigan, Chicago, IL 60605. Telephone: (312) 663-1600, Ext. 669. Graduate Dance/Movement Therapy Program. Jane Ganet Sigel, M.A., A.D.T.R., Coordinator.

Hahnemann University. M.S. 906, Broad and Vine Streets, Philadelphia, PA 19102-1192. Telephone: (215) 762-6924, 762-6926. Department of Mental Health Services, Dance/Movement Therapy Graduate Program. Sharon W. Goodill, M.C.A.T., A.D.T.R., Director.

Hunter College CUNY. 425 E. 25th Street, New York, NY 10010. Telephone: (212) 481-4347. Graduate Dance/Movement Therapy Program. Nana S. Koch, Ed.D., A.D.T.R., Coordinator.

Naropa Institute. 2130 Arapahoe Avenue, Boulder, CO 80302. Telephone: (303) 444-0202, Ext. 558. Somatic Psychology Department. Christine Caldwell, A.D.T.R., L.P.C., Director.

University of California, Los Angeles. 405 Hilgard Avenue, Los Angeles, CA 90024. Telephone: (310) 825-3951. Gradu-

ate Dance/Movement Therapy Program, Department of Dance. Irma Dosamantes, Ph.D., A.D.T.R., Director.

Other graduate programs and graduate coursework in Dance/Movement Therapy

Recognizing that many regions of the country do not have an integrated comprehensive sequentially ordered program in dance/movement therapy, the ADTA recognizes an alternate route to registry. The alternate route is designed for individuals with extensive dance/movement background wishing to pursue a master's level degree in dance/movement therapy education and training in combination with study in a related field (i.e., social work, psychology, counseling, special education). For specific information about attaining the alternate route DTR, write to ADTA-Credentials Committee.

Courses in the following colleges and universities may meet requirements toward registry.

Arizona State University. Arizona State University, Department of Dance PEBE 107-B, Tempe, AZ 85287-0304. Telephone: (602) 965-5029. Beth Lessard.

California Institute of Integral Studies. 765 Ashbury, San Francisco, CA 94117. Telephone: (415) 753-6100. Drama Therapy Master's Program. Renee Emunah, R.D.T., M.A.

California State University, Hayward. Department of Kinesiology and Physical Education, Hayward, CA 94542-3062. Special Graduate Major in Dance/Movement Therapy. Telephone: (510) 881-3108. Cynthia F. Berrol, Ph.D., A.D.T.R.

Laban Centre for Movement and Dance. Laurie Grove, New Cross, London, UK SE14 6NH. Telephone: 44-81-692 4070, Ext. 37. Diploma & Masters Dance Movement Therapy, MPhil & PhD Dance Research. Jacqueline Blatt, M.C.A.T., A.D.T.R.

Lesley College. 20 Everett Street, Cambridge, MA 02138. Telephone: (617) 868-9600. Counseling Psychology/Expressive Arts Therapies. Vivien Marcow-Speiser, Ph.D., A.D.T.R., Acting Coordinator.

Marylhurst College. P.O. Box 201, Marylhurst, OR 97036. Telephone: (503) 636-8141, Ext. 381 or 403. Dance Therapy Certification Program/Art Therapy Department. Christine Turner, M.S., A.T.R.

Melbourne University. 4 Madden Grove, Kew, Victoria, Australia 3101. School of Early Childhood Studies, Graduate Diploma in Movement and Dance. Telephone: (03) 860-3333, 3374. Karen Bond.

New York University. School of Education, Health & Arts Professions, 35 West 4th Street, New York, NY 10003. Telephone: (212) 998-5406. Dance Professions/Department of Communication and Culture. Miriam Roskin Berger, A.D.T.R.

Northwest Institute for Creative Arts Therapies. 33 E. 20th Street, Eugene, OR 97405. Telephone: (503) 683-4483. Counselor Education Department. Leigh Files, M.A., A.T.R., L.P.C.

Southampton College. Long Island University, Southampton Campus, Southampton, NY 11968. Telephone: (516) 283-4000 or (516) 653-8750. Dance/Movement Therapy Intensive, Two Week Institute, Fine Arts Department. Linni Deihl, M.F.C., A.D.T.R.

State University of New York at Brockport. Department of Dance, Brockport, NY 14420. Telephone: (716) 395-2153. Jacqueline Davis, M.A., C.M.A.

Wesleyan University. Middletown, CT 06457. Telephone: (212) 420-0899. Graduate Liberal Studies Program. Jane Wilson Downes, A.D.T.R., C.M.A.

Undergraduate Dance/Movement Therapy coursework

These courses help students evaluate their interest in dance/movement therapy and may serve as prerequisites for graduate study.

Barat College. 700 Westleigh Road, Lake Forest, IL 60045. Telephone: (708) 461-9826. Dance Department with major emphasis in Dance Therapy. Gina Demos, A.D.T.R.

Brookdale Community College. Newman Springs Road, Lincroft, NJ 07738. Telephone: (908) 842-1900. Creative Arts Therapies. Dr. Nina Garcia.

Goucher College. Dulaney Valley Road, Baltimore, MD 21204. Telephone: (410) 337-6387. Dance Department. Crystelle Trump Bond, M.S.A.

Hope College. Dow Center, Holland, MI 49423. Telephone: (616) 394-7700. Dance Department. Maxine DeBruyn, Chair of Dance.

Hunter College. 425 E. 25th Street, New York, NY 10010. Telephone: (212) 481-4347. Dance Therapy Program. Nana Koch, Ed.D., A.D.T.R.

Loyola Marymount University. 7101 W. 80th, Westchester, CA 90045. Telephone: (310) 338-5160. Department of Theater and Dance. Judy Scalin, Chair of Dance.

Marymount College. Tarrytown, NY 10591. Telephone: (914) 631-3200. Department of Dance. Janice Cronin.

Metropolitan State University. 121 Seventh Place E., Suite 121, Metro Square, St. Paul, MN 55101-2189. Psychology Department. Telephone: (612) 332-0278. Marylee Hardenbergh, A.D.T.R., C.M.A.

The American Dance Therapy Association

Since its founding in 1966, ADTA has worked to establish and maintain high standards of professional education and competence in the field.

ADTA stimulates communication among dance/movement therapists and members of allied professions through publication of the ADTA Newsletter, the *American Journal of Dance Therapy*, monographs, bibliographies, and conference proceedings.

ADTA holds an annual conference and supports formation of regional groups, conferences, seminars, workshops and meetings throughout the year.

For further information, contact the American Dance Therapy Association, 2000 Century Plaza, Suite, 108, Columbia, Maryland 21044.

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Attuning to the Fetus and the Young Child: Approaches from Dance/ Movement Therapy

Susan Loman, M.A., A.D.T.R., Antioch New England Graduate School, Keene, New Hampshire

This paper is an enlarged version of a chapter published in 1992, Fetal movement notation: a method of attuning to the fetus, in S. Loman & R. Brandt (Eds.), **The body mind connection in human movement analysis** *(Keene, New Hampshire: Antioch New England Graduate School).*

Children often tell us how they feel by the way they move. Adults can learn to better understand and relate to children through body movement. For example, a mother attunes to her one-and-a-half-year-old son by moving in his rhythm while they are sitting together. As he ventures out on his own, she continues to move as he does. Through their shared movement dialogue, she tells him that she supports his creative expression.

When parents understand the various stages in movement development that their children are experiencing, they begin to be able to predict the changes as their children grow, rather than be taken by surprise each time the child enters a new stage of development. Parents and caregivers can learn to meet the child's developmental needs through pleasurable creative art modalities, especially dance, art and music; channeling aggressive impulses into appropriate and interesting motor avenues; and creating and maintaining a consistent "holding environment" (Winnicott, 1965), which establishes a basic trusting relationship.

Understanding normal movement and psychological functioning, as well as the key concept of attunement, or nonverbal empathy, can help parents, caregivers, and professionals working with very young children to avoid stress at vulnerable periods of development and to prevent emotional disorders. My own work as a dance/movement therapist is grounded in the Kestenberg Movement Profile (KMP) system of movement analysis, which describes predictable movement phases of development through variations in muscle tension and changes in bodily shapes which can be notated and catalogued. The KMP provides dance/ movement therapists with a comprehensive tool for the assessment of clinical populations of all ages as well as imparting a framework for understanding the progression of motoric development.

My initial dance/movement therapy work with infants and their parents took place at the Center for Parents and Children, which operated from 1972-1990 under the direction of Judith Kestenberg and Arnhilt Buelte. Through the use of nonverbal methods, such as attunement, mutual holding patterns, breath support, and creative arts, staff at the Center applied Kestenberg's movement studies to helping parents and their children to communicate more effectively together. The Center was also designed to facilitate harmonious relationships between family members, using both nonverbal and verbal methods of communication, and to promote community spirit and an extended family environment during the sometimes challenging and often isolating process of parenting.

Part of the Center's prevention philosophy was based on the concept of providing an optimal environment for growth in each developmental phase. Pleasurable creative art activities were offered which enhanced and supported the child's mastery of developmental tasks. When special problems, such as sleep disturbances, weaning, separation, or anxiety, arose, the multidisciplinary staff worked with individual families using movement, music, or art interventions. The staff was informed of families' progress through weekly journals, written by the mother or father. If a significant event was occurring in the family, such as a hospitalization, the birth of a new baby, or a long business trip of a parent, a special book was written and illustrated to help the child understand and prepare for

Tension-flow Rhythms

Tension-flow rhythms are patterns of tension changes which occur in regular or irregular intervals and serve need satisfaction. Rhythms of tension-flow are used to express various ranges of pleasure and displeasure and are observable in 10 developmentally-based patterns:

1. **Sucking**
2. **Biting**
3. **Twisting**
4. **Straining**
5. **Running**
6. **Run-stop-go**
7. **Undulating**
8. **Swaying**
9. **Jumping**
10. **Leaping.**

Although they are developmentally based, all 10 rhythms are potentially available to the fetus and are present at birth. As the child matures, rhythms associated with various phases in development come to the fore.

In interpretation, specific tension-flow rhythms are connected with particular modes of drive discharge and need satisfaction. An individual's preferred manner of dealing with drives and needs is reflected in his or her predominant tension-flow rhythms. When two or more individuals share similar tension-flow rhythms, the core of empathic communication is present.

the event. In addition, the Center's Prenatal Project trained prospective parents to become aware of the preferred rhythms of the fetus and newborn and to respond in a similar rhythm in order to facilitate early mother-child bonding (Kestenberg, 1975). Expectant mothers learned how to record fetal movement to further enhance early empathy.

Since 1988, a Creative Movement Group for Parents and Children, modeled after the Center, has been an integral part of the Masters Program offered to graduate dance/movement therapy students at Antioch New England Graduate School. As director of this program, I feel that it is essential to train creative art therapists to work with a normal population as a foundation for their future therapeutic work. Thus since 1988, the Creative Movement Group at Antioch New England has been open to local children from three months to four years of age who are accompanied by a parent, grandparent, or caretaker. Offered for 12 one-hour sessions per semester, the group provides parents and caretakers with a chance to relate to and understand their children's movement development and also serves as a fieldwork course for three or four dance/movement therapy students, who learn to lead the group under my supervision. Students have the opportunity to observe normal movement development in the children and to work with families, developing their own styles in working with this age group. I also offer workshops for parents and professionals working with young children.

This article will describe some of the basic concepts and techniques used at the Center for Parents and Children and in the Creative Movement Group for Parents and Children as training for dance/movement therapy. An accompanying overview of the Kestenberg Movement Profile's (Kestenberg and Sossin, 1979) core ideas of tension-flow movement patterns is presented as the foundation of this approach to understanding underlying motoric factors in children's growth.

Attunement: The basic premise and its variations

Attunement, or nonverbal empathy, is the basis of the early parent-child bonding process. One form of attunement is **complete attunement**, which can be found in the mother-infant relationship. Kestenberg explains that "complete attunement is based on mutual empathy...a sameness of needs and responses, but also a synchronization in rhythms" (1975, p. 161). Kestenberg postulates that needs and feelings are reflected in changes in muscular tension (**tension-flow**). In normal development, Kestenberg emphasizes, parents and children do not only attune together. Periods of clashing, especially when the child is transitioning into a new developmental phase, are essential for letting the parent know that developmental needs are changing. In **tension flow attunement** — whether between mother and child, between adults, between children, or among groups — needs and feelings are responsively duplicated on the level of physical sensation. In **complete attunement of tension-flow**, which can be found between mother and nursing child, there is a kinesthetic identification in which the muscular tensions of one are simultaneously felt in the other's body (see page 23 for a discussion of tension-flow rhythms during the first five years of life). However, this duplication of the flow of muscular tension does not necessarily require duplication of body shape (Loman, 1988).

Visual attunement and **touch attunement** involve the same principle of duplication response, but are perceived and expressed through different forms of contact. Visual attunement is accomplished by observing the level and rhythm of tension in another person's moving body, and then matching that tension-rhythm in one's own body. Again, the muscular tension alone is duplicated, not the shape of the body. For example, to attune to an infant who is vigorously kicking its legs, one could move in rhythm with the kicking with any body part, matching the muscular tension, rhythmicity, and speed of the baby's movements.

Tension-Flow Attributes

Tension-flow attributes describe tension-flow changes in terms of six qualities of intensity, which determine the expression of affect. They also reflect an individual's temperament and characteristics of arousal or quiescence (Sossin & Loman, 1992).

1. **Even flow:** Tension is stabilized at the same level; indicates ease, resting, steadiness, steadfastness, and an even temperament.

2. **Flow adjustment:** Tension adjusts itself and adapts to meet new situations; indicates an accommodating temperament.

3. **High intensity:** Tension reaches extreme bound or free flow; reflects intense feelings, such as joy or anger, and an excitable temperament.

4. **Low intensity:** Tension remains moderately bound or free; reflects low-key reactions or decreased excitement, and a mild temperament.

5. **Abrupt:** Tension increases or decreases at a rapid rate; reflects impulsivity, impatience, or alertness.

6. **Gradual:** Tension increases or decreases at a slow, leisurely rate; reflects patience, endurance, and taking the time to feel intensely.

Touch attunement is similar to visual attunement, but based on touch contact: for example, hold hands and respond to any changes in hand movements (touching). As in other forms of attunement, the responses occur without delay, simultaneously with the perception of movement. Even the smallest changes, such as the contraction or stretch of muscles, will be duplicated. However, the size of the attuning response does not have to reflect the size of the original movement; the response to a tiny muscular stretch could be felt in the responder's whole hand or throughout the responder's entire body.

Attunement is very similar to the approach used by Marian Chace, a founder of dance therapy, in working with psychiatric patients. Chace describes her technique of making initial contact with a patient:

> The movements used in establishing initial contact with a patient may be qualitatively similar to those of the patient (not an exact mimicking, since this is often construed by the patient a mocking)... The following is an example of how the patient's muscular tensions are picked up by the therapist and carried into dance action. One patient stands hunched forward, contracted through the abdomen, his whole posture that of a person in terror. The therapist feels the tension within her own abdomen, and using this as a center of action, she develops a tension relaxation dance sequence (1975, p. 73).

Touch attunement is the mechanism first used to teach expectant parents to perceive fetal movement. In one exercise, the expectant mother's partner gives her a back massage with a variety of tension-flow patterns (see page 20). This rhythmic massage provides sensations similar to the flutters and pushes of the fetus, and helps mothers learn to become sensitive to movement changes (such as intrauterine fetal movements) which they can feel but cannot see. The mother attunes to these sensations by duplicating them with hand movements, simultaneously tensing and relaxing her arms and hands. After learning these exercises, she is taught tension-flow notation to record her perceptions of fetal tension changes.

The holding environment

The Center for Parents and Children translated Winnicott's concept of the "holding environment" into the physical surroundings of the Center, which were designed to create an atmosphere of safety and trust. In the Creative Movement Group, we continue the process of translation, creating safety and trust through consistency and continuity in group membership and routines, as well as in the physical environment. We keep the structure of the group consistent and stable. The room is arranged the same way each week, and the same group leaders come each time. We sing a hello and a goodbye song to begin and end the sessions. We also sing to begin transitions, as we prepare the group for changing an activity. The children soon become able to predict the sequence of activities during the session. They feel comfortable within this repetitive structure, and their creativity and self-expression begin to flourish.

The holding environment creates the space in which children can fully explore an activity. It also provides support and enlists the trust of parents. Over the twelve-session course of the group, the parents increase their comfort, responsiveness, and involvement. The consistent presence of the group leaders is extremely important for the children as they become more and more comfortable with each other.

Props to encourage creativity

We use props, such as scarves, parachutes, foam balls, hoops, and stretch material, which we consider "neutral" objects. The children can use these materials in their own ways to help them express their moods and feelings. For example, if a child comes to the group in an angry mood, she can wave a scarf vigorously up and down or throw it, which helps the child express her feelings creatively. If, on a different day, the child is sad, she might wave the scarf slowly and delicately. The group leader can reflect these expressive movements with her own scarf and begin to create a group movement theme, which promotes mutual understanding within the group. Sharing movement communicates support and recognition and builds a sense of self-confidence in the children.

At other times, a scarf may become a bridge between people. A parent and child may move together as they hold different ends of the scarf. When the child or parent ends the interaction, the child can carry the image of this interaction in the realm of the imagination.

Parachutes can be used to encourage group activity even when individual group members move in different ways. For example, as several three-and-a-half-year-old girls jump on top of a large parachute, parents and students on the periphery attune to their movement rhythms by making jumping-type vocalizations and tapping on the ground. A one-and-a-half-year-old boy, who cannot jump yet, joins the girls by bouncing up and down. Children of different age groups can tune into each other and cooperate by sharing a similar rhythm.

Intervention strategies

Numerous intervention strategies were created at the Center for Parents and Children to help parents understand the developmental movement needs of their children. For example, parents are encouraged to use holding and supporting methods which promote proper alignment. Placing a four-to-six-month-old child on the belly aids the child's pre-crawling movements. Picking up a child by holding her at the waist, rather than under the arms, encourages the child to support her own weight rather than to hang limply.

Rhythms of the first year

Sucking rhythm: This rhythm is observed at birth during reflexive sucking, which later is controlled voluntarily. It is best observed during nursing in the infant's oral zone and can also be found in the fingers and toes. The rhythm typically has a smooth, rocking quality of tension and release in short, regular intervals. This rhythm promotes symbiosis and attunement, self-soothing, and nurturing.

The primary plane in which movement takes place is the horizontal, or table plane. Children in this phase enjoy putting objects in their mouths and sucking on them. Pacifiers, fingers, toys, and blankets all serve as pleasurable objects for this purpose.

Biting rhythm: This rhythm emerges with the onset of teething and typically has a "snap and bite" quality. It is recognized by sharp transitions in tensed, then released, muscle contraction, and when used to chew, the quality of holding on or **even flow** is added.

These rhythms serve the practical function of cutting through solid food as well as the developmental function of separation and boundary formation. The child enjoys patting and tapping, shaking rattles, clapping games, and banging on any convenient surface.

Rhythms of the second year

Twisting rhythm: Beginning at the end of the first year and continuing into the beginning of the second year, the child becomes flexible at the waist and pelvis in the service of crawling and adjusting to spatial demands. "Anal twisting" rhythms appear in spinal motions which originate in the anal sphincter and spread throughout the body. The child is playful, teasing, and coy and begins to practice more locomotor skills. Later, the child enjoys smearing food and such creative messiness as finger painting.

Straining rhythm: This rhythm is characterized by evenly-held intensity of muscle tension, usually maintained in high intensity. Toddlers pull themselves up, climb, and let themselves down with caution in rhythms like these. Typical of an 18-month-old child, tasks in this phase are: the beginnings of bowel control, climbing skills, autonomy, stability, organization, confrontation, verticality, intentionality, presentation of self and the adaptive approach to the force of gravity.

In this phase the child makes the transition into the vertical plane, becoming upright to face the world. Children enjoy making things with clay, throwing objects into containers, and asserting themselves by saying "no" with great intensity. This is also the age of the start of temper tantrums.

Rhythms of the third year

Running/drifting rhythm: This rhythm is characterized by smooth transitions and small, gradual changes in tension, as seen in urinating passively with a lack of control. A young toddler may begin running by touching the front of the body and end by touching an object that bars further progression.

This developmental stage begins in the third year of life. Tasks are to master locomotion, carry out operations, and learn to run (although without yet being able to stop). It is a phase of free-flowing fluidity and wandering with no specific aim. It marks the transition from being stable in the vertical plane to becoming mobile in the sagittal plane (moving back and forth). The rhythm originates in the urethral sphincter muscle initiating the flow of urine. Typical activities in this phase include chasing and catching games.

Run-stop-go rhythm: The rhythm is typified by sharp transitions of muscle tension changes, often occurring abruptly but also capable of changing gradually. During the second half of the third year of life, children learn to initiate and stop the flow of urine as well as to stop themselves, without falling, while running. Movement qualities develop an abrupt sharpness, which has an urgent or impatient sense of time. Favorite activities include squirting water and stop-start games such as musical chairs and red-light/green-light.

Rhythms of the fourth year

Wavy rhythm, undulating: The rhythm is characterized by gradually rising and falling waves of low intensity muscle tension and release, emerging in the pelvic region. The specific zone of origin is the inner portion of vagina or the tunica dartos of the scrotum. The inner-genital phase is the developmental stage beginning in the fourth year of life, and the task is to integrate past and present needs. Children are interested in babies and playing with dolls in a nurturing fashion. Typically they alternate between mature behavior and regression to earlier, more disorganized patterns. Both girls and boys begin nagging and are unclear about what they require to satisfy their needs.

Swaying rhythm: This rhythm is characterized by gradually rising and falling waves of high intensity muscle tension and release. Most predominantly observed during childbirth contractions in labor and delivery or menstrual cramping, it is rarely seen in children in its pure form.

Rhythms of the fifth year

Jumping rhythm: The rhythm is characterized by an abrupt rise and fall of muscle tension with smooth intervening transitions. The rhythm frequently reaches high intensity. In children, it can be observed during periods of excitement, showing off, jumping, playing shooting games, and bubbling over with ideas. The outer-genital phase is the developmental stage between the fifth and seventh years of life. The task is to become outwardly directed, with increased needs for gross motor activity and intensified relationships. Movements in this phase are intense, percussive, and abrupt and originate in the outer genitals.

Leaping rhythm: The rhythm is characterized by an abrupt rise and fall of tension with sharp intervening transitions. The rhythm frequently reaches high intensity. Children use this rhythm for aggressive butting, pushing, punching, broad-jumping, and leaping. In comparison with the "jumping" rhythm it is more focused and controlled aggression — sharper, more directed and coordinated.

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Children are provided the opportunity to fully explore each movement milestone, such as standing unsupported. At times, adults prematurely stimulate a child to advance to the next stage — for example, by helping the newly standing child to walk. If children are **not** rushed into walking, they practice stooping and standing and eventually walk sideways while holding onto objects like furniture. When they do begin to walk forward, they have a good feeling of stability and balance. Later, children in the running phase are encouraged to run and stop to music. The running is contained within an activity, but this motoric outlet is not prohibited.

The creative arts encourage acknowledgment of the full range of feelings. For example, when a three-year-old child was angry during the group and would not participate in the activity, singing the song "When you're angry and you know it" prompted her to show us three or four dances about feeling angry. Role plays with a doll can be used when children hurt themselves during the group and don't know what happened. When two children bumped into each other, 18-month-old Peter began to cry. The scene was reenacted with two dolls, and the story was retold emphatically: "The doll was running and bumped right into this doll. Her head bumped right here on that doll's head. The doll's head hurt so much, she cried. Poor doll, and poor Peter." By this time, the child usually turns his attention to the doll and stops crying. The scenario ends with the song, "Feel better, Peter, we hope you feel better soon."

Understanding that children have their own movement styles and preferences teaches us how to approach children individually. In a recent group, one child who liked to be cajoled into interaction pretended to hide. The group leader played along with her. When the leader exclaimed, "Where is Lilla? Where could she have gone? I don't see her anywhere, do you?" the child began to smile and then appeared. Other children may like to be approached with hesitation, coyness, or directness.

Children's aggression

In the Center model, aggressive movement qualities are seen as part of the normal progression of movement phases and are not prohibited. The group leader does, however, help children channel aggression into a similar, but more acceptable, form of the same movement quality. For example, a two-year-old boy began to pull the hair of a one-year-old child. In an effort to prevent this behavior, the father pulled his son away and said, "No, don't pull her hair." This intervention was not effective. The boy continued to pull the younger child's hair. In response, the father continually shadowed his son, and the atmosphere in the group became tense.

Then the leader brought a large box of varicolored tissue paper into the room and encouraged the children to explore it. The children squeezed it into balls, put it on their heads, tore it, and threw it. At first the hair-pulling boy was delicate with the tissue paper, but after seeing what the other children were doing, he began to experiment. He especially enjoyed an interaction with the group leader which involved a "tug of war" with the tissue paper that used the same movement pattern as hair pulling. A little later in the session, when the boy again attempted to pull the younger child's hair, the leader intervened immediately, offering him the tissue paper and saying, "We can't pull children's hair, but we **can** pull the tissue paper." The boy was provided with tissue paper after each attempt at hair-pulling. By the next week, he had completely stopped pulling the younger child's hair.

Developing movement themes

The development of age-appropriate movement themes, such as encouraging four-year-olds who love to jump to pretend to be popping popcorn, allows children to express their own creativity as well as their need to jump. In this game, children can determine how small they will be as kernels of popcorn and how big they will be when they are ready to jump up and down as popping popcorn. Finally, they will decide when the popcorn is ready, and if they will have a popcorn party. A popular theme for three-year-olds is the creation of big and small ocean waves with the parachute. The children can swim in the ocean on top of the waves, or go underneath it and swim underwater. Images of fish swimming, finding their fish houses, and avoiding fish monsters help to keep the activity interesting. Children remember themes from earlier weeks and begin to make requests for creative play activities based on previous groups. These suggestions reflect various developmental stages and contribute to the group's cohesion.

Working with expectant parents

At the Center for Parents and Children, Kestenberg and her colleagues designed the Prenatal Project to help expectant parents prepare for the arrival of the new baby. These "Preparation for the Child" classes differ from other pregnancy classes in that they prepare the parents not only for the birth process but also for the initial development of the relationship between parent and child (Kestenberg, 1980). In this class, parents are given the opportunity to re-discover the movement patterns of babies, which differ a great deal from adult movement patterns. They are encouraged to develop an image of how the unborn child moves, and are taught to notate the tension changes in fetal movement. Kestenberg describes the results of this training process:

> This (training) not only brought them into a type of communication with the fetus, but it taught them to consider the fetus as a partner, an idea which then pervaded their deliveries. They were aware of the fetal movement during labor and

had a feeling of continuity from inside to the outside by observing the movement of the baby a soon as it was born. The expectation that one can recognize the baby by the way it had moved inside of the mother strengthened the feeling of belonging mothers develop after the initial estrangement from the infant (1980, p. 59).

In these classes, the expectant mother is encouraged to keep a journal of her fetal movement notations, physical sensations, feelings, and dreams. Kestenberg believes that many dreams during pregnancy are related to fetal movement (1982), with specific themes according to the state of pregnancy (1976). For example, dreams in the third trimester often have mobile themes involving flowing water or riding in vehicles such as sleds and watermobiles.

Special exercises help the expectant mother's body actively stretch and adjust to the fetus. These exercises emphasize the growing movements of widening, lengthening, and bulging, helping to make room for the fetus and to avoid pain from pressure on the bladder or back. The mother is taught to breathe into painful spots, which also encourages stretching to accommodate the baby's expansion. A modified form of belly dancing is taught, to increase flexibility and coordination, aiding in a smooth delivery. This process of adjusting the expectant mother's alignment to accommodate the additional weight of pregnancy helps to give her the feeling that she is actively carrying the baby, instead of being pulled down by it (Loman, 1980).

Another benefit for expectant mothers is an improved body image, at a time when many women may be feeling awkward about their growing size. One participant describes this aspect of the program:

> (The exercises) helped us to stay in shape and cope with the increase in body weight... Common problems such as heartburn and excessive urinary frequency were helped with posture changes so that the weight was shifted from the bladder or stomach. Simple things like — How do you get up off the floor or chair?... what is the best way to rest with your legs elevated? — proved to be very helpful (Jordan, 1981).

The prenatal classes have been experimenting with introducing the fetus to music, through headphones placed on the mother's abdomen (Kestenberg, 1982). The idea of this exercise is that music which fetuses hear in the womb may be especially soothing to them after birth. Results so far indicate that the fetus responds to the music either by becoming more still (perhaps sleeping) or by moving more actively — and some mothers are reporting that after birth their babies continue to respond to the music which was played to them in the womb. It should be noted, however, that the fetus has no choice in the selection of the music, and more research is needed to differentiate negative responses (music too loud or unpleasant to the baby) from positive responses (music enjoyed by the baby).

Another kind of musical expression is also used in the class — the expectant mother is taught to sing deep tones to accompany labor and pushing contractions. These vocalizations are practiced throughout the pregnancy. They have been shown to be effective in increasing the dilation of the cervix during the transition phase of delivery, and in enabling the expectant mother to actively engage during labor, instead of distracting herself from the pain.

In several instances, Kestenberg has attended deliveries as a coach, and videotaped the birth process. These videotapes reveal how mothers utilize the concepts learned in the "Preparation for the Child" classes. As one mother writes:

> ...I notated my child's fetal movements and drew pictures of what I thought it looked like inside. I put headphones on my stomach and played rock music to this baby. I even talked to this unborn child of mind, and so did my son, Keith — "Hello, baby!" he would scream into my stomach... Dr. Kestenberg's presence during my labor and delivery was a wonderful and extremely helpful experience. (She) moaned, groaned, pushed and even screamed with me (Amoruso, 1982, p. 4)

Fetal movement notation

Fetal movement patterns vary greatly. All the tension-flow rhythms, attributes, and combinations of rhythms and attributes (see sidebars) can occur in the womb. Each fetus has its own movement repertoire. Furthermore, fetal movement appears to progress and develop over the course of the pregnancy. The early movements feel like small bubbles of low intensity and are fairly repetitive. As the pregnancy progresses, more variety of movement develops, and over time, repeated movement phrases can be recognized. Some typical fetal movement patterns are shown in Figure 1.

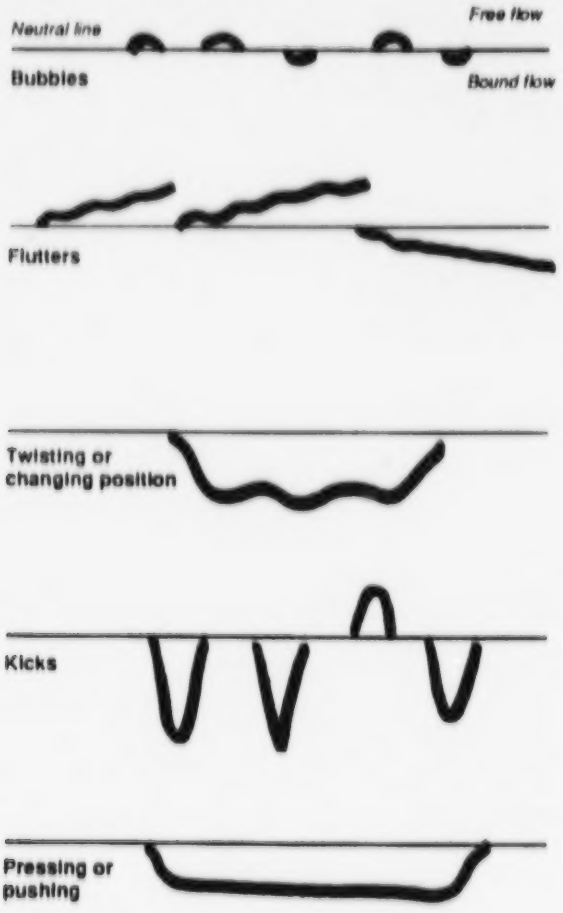
Expectant parents begin their training in fetal movement notation with tension-flow touch attunement exercises. For example, in one exercise the expectant father presses his palms against the mother's back for a few seconds, then rhythmically releases and repeats the pressure every few seconds. To attune with these sensations, the mother tenses and relaxes her fists in the same rhythm as the pressure. As she becomes adept at responding to these tension changes, she begins to isolate her responses to her hands and fingers.

The expectant mother traces the fetal movement notation on paper by hand. She can begin her fetal movement journal as early as the fourth or fifth month of pregnancy, and can either notate the movement as it occurs or from memory. The notation records the variations in muscle tension and release seen in a wide variety of rhythms and attributes. The tension changes are recorded by drawing variations in tension level, in-

tensity and rate along a horizontal time axis. This tension-flow writing tracks the rhythm of the fetus' muscular contractions and releases along a time axis, producing tracings which look like EKG recordings. We have found that pregnant women learn the technique of notation very easily.

Some expectant mothers will feel a familiarity or compatibility with their unborn child's movement, while others will feel estranged from it. In either case, attunement to her fetus' movement can help the mother get to know her child and begin the process of mother-child bonding. On a family level, the individual tension-flow attribute diagrams of the fetus and other family members will show their characteristic patterns of temperament and affective expression. These individual tension-flow diagrams can be used to improve understanding of potential areas of harmony and conflict within the family, and to assist the family system in adapting to the new baby.

Figure 1: Fetal movement notation



So far, fetal movement notation has been used with relatively high-functioning families, but it may also be a powerful diagnostic tool to identify expectant mothers who have difficulty relating nonverbally to their fetus and who might benefit from extra support and training. For adoptive parents, touch attunement exercises could help them recognize and respond to their children's needs and to enhance early communication.

In conclusion

Normal movement and psychological functioning in the earliest years of life begins with the first flutters and pushes of the fetus and develops into the varied repertoire of the pre-schooler, able to express the full range of emotions through movement. Adults who understand the various stages in movement development and who are attuned to the unique movement patterns of the young children in their care are better able to support these children's creative, self-expressive mastery of developmental tasks.

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Hopping, Jumping, Leaping, Skipping, and Loping: Savoring the Possibilities of Locomotion

Lois Barclay Murphy, Washington, D.C.

As I sat on a bench at the side of the road in the zoo, watching the children brought by their mothers or fathers, I rarely saw a little boy walking quietly beside his parent. One was hopping, another was jumping. Others were leaping, or skipping, or loping, raising each foot higher than it needed to be lifted for ordinary walking. Some children waved their arms. Each one seemed to savor the feeling of the moment, wanting to discover the possibilities of locomotion.

This curiosity seemed to disappear by the age of four or five, when the little boys now walked quietly along with mother or father.

Lois Barclay Murphy

When does locomotion begin? One might say that locomotion begins at about four months, when a baby first succeeds in turning over on his stomach. He has to be able to do that before he begins to creep and crawl, which he succeeds in doing in several weeks. Some babies, however, do not creep or crawl. They want to be able to see everything, so they have to discover a way to manage locomotion while retaining a large visual area. I was told as a child that I managed locomotion by maintaining a sitting position, extending one leg, and hitching along. I couldn't move as fast as a crawling baby moves, but I could see much more. As an adult, I have seen other babies using the same system.

It is some time after creeping and crawling (or hitching) before a baby is able to stand up and take his first steps. The timing varies from child to child. At a party for little children, I saw one eight-month-old boy running around easily, while the twelve-month-old host sat by himself, thumbing through a magazine!

Usually we see children in the second year of life toddling around with uncertain balance and gait. This gradually smooths out over the next two or three years, so that by four, children can walk as adults do. But most of the time, they don't — even after they have achieved a "real" walk, until school age children mostly run, or stretch, stride, or bounce. Walking is not taken for granted at first — it is an achievement to be used and explored. Little children like to explore the **possiblities** in walking — walking on curbs and other special areas. They climb out of their strollers and push them for awhile. Only when they are tired do they climb back in, ready to **be** pushed.

What leads the child to go through these stages? From early infancy, an alert and active baby watches the people around him. He probably identifies with them, internalizing what he sees and developing the wish and intention to do what they do. (A "wild" child raised by animals does not develop the ability to stand up and walk and run, but gets around on all fours, like the animals he sees.) When I heard the enthusiastic yelp of a one-year-old who had managed to stand up alone, I realized how he had longed to be able to do that. He had watched the big people going around on their own two feet, and he wanted to do that too.

Lois Barclay Murphy

Do Baby Boys Naturally Lead with the Left Foot? Research on the Asymmetries of Movement Patterns in Newborns and Infants

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Dance is to move the body in rhythm, ordinarily to music. The baby first "dances" to the rhythm and sounds of the mother's voice, heart beat, breathing, and digestion as the fetus first moves at approximately 12 weeks gestational age.[1] At birth, the infant brings to the dance movement abilities that include his or her postural response to being held or moved, rhythmicity of movements, and a repertoire of movement patterns which are building blocks for voluntary actions.

The reflexes and spontaneous movements of most newborns are asymmetric — that is, they are stronger and more coordinated on the right than on the left side of the body, although both sides move normally.[2] During delivery most newborns emerge with a right rotational posture (i.e., the infant's face rotated towards the mother's right thigh).[4] When the walking reflex is elicited, they lead with the right foot.[5,6] Infants have a stronger grasp with the right hand than with the left[7] and hold the right hand in a fisted posture more often than the left.[8] This is a normal asymmetry believed to be a building block for later handedness and footedness. Among adults, 88.2 percent are right-handed, using the left hand to stabilize objects and the right for many voluntary movement behaviors.[9]

Newborn reflex asymmetry, in which certain behaviors are normally somewhat stronger, more coordinated, or more frequently exhibited on one side of the body than on the other[3] can serve as a sensitive behavioral index of individual differences in underlying neural organization. (We do not refer here to gross asymmetry, such as hemiplegia, which would indicate severe neurological abnormality.) Studying newborn reflex asymmetry is particularly helpful in trying to understand how perinatal factors may disrupt normal development and how prenatal hormones may affect individual differences in central nervous system organization controlling movement patterns.

This article will present our team's research on the asymmetries of movement patterns with which newborn infants begin their "dance." We are discovering how infants' asymmetric movement patterns are coordinated within and across body regions, how male and female newborns differ in the asymmetric organization of their foot and leg movements, and what implications this finding has for understanding the causes of normal individual differences in behavior development, as well as the etiology of developmental disorders.

Coordination of asymmetric movements

Various sensory and motor asymmetries (eye, ear, hand, foot dominance) do not appear to become correlated over developmental time. In adults, these asymmetries not only favor the right half of the body but are also positively, though quite imperfectly, correlated with each other.[9] Among 7-year-olds, handedness correlates with the direction of spontaneous head turns associated with reflex adjustments of the trunk and limbs in infancy.[10] Among 19-week-old babies[11] and 2-year-olds[4], handedness correlates with their rotational posture during delivery.

This correlation of asymmetries among a wide variety of movements could reflect control either by a single lateralized system (e.g. cortical or subcortical structures) or by the integrated action of multiple subsystems. Multiple subsystems, if they exist, may be less tightly integrated at birth.[12,13,14] Because most studies of motor asymmetry have examined only a single movement behavior, little is known about the coordination of different asymmetric movements in either newborns or infants. Our research was designed to explore this uncharted territory.

Examining coordination among different asymmetric movements in newborns

To examine the coordination among different asymmetric movements, we needed to look at a battery of movement behaviors in the same baby. We selected 4 areas of the body (i.e., upper, lower, proximal, distal), and 10 movement behaviors. The four body regions differ in stages of movement development at birth. Development proceeds simultaneously from the upper to the lower body and from the proximal regions to the distal.[15,16,17] Moreover, these movements may be innervated by different movement subsystems.[18]

In newborns, the different movement control systems in the midbrain, hindbrain, and spinal cord are likely to be functionally isolated — in other words, different subsystems control such newborn behaviors as spontaneous fisting and automatic walking. So we did not expect to find a correlation among asymmetries of movement behaviors controlled by different subsystems at different levels of the neuraxis. On the other hand, a single motor pool can regulate several behaviors (for example, spontaneous fisting and the palmar grasp reflex). We did expect the asymmetries of these behaviors to covary.

Our research results showed that, indeed, newborns' control systems for behavior asymmetry in 4 quadrants of the body (i.e., proximal upper-body, distal upper-body, proximal lower-body, and distal lower-

body) appear to be functionally isolated. As we expected, in newborns the asymmetry of spontaneous fisting did not predict asymmetry of the automatic walking reflex. The lack of correlation among quadrants suggests that in newborns, multiple subsystems, rather than a single asymmetric system, control asymmetric action in different body regions.

How, then, to explain the significant (although imperfect) correlation between handedness and footedness in adults?[9] The absence of a similar correlation in newborns suggest that development involves some integration of separate asymmetric subsystems.

Behaviors dependent on a common pool of spinal motor neurons

Although, in newborns, multiple subsystems appear to control asymmetric action of different body regions, a single neural subsystem appears to control asymmetries in behavior that depend on a common pool of spinal motor neurons. We found three pairs of movements that shared a motor neuron pool:

1. Spontaneous fisting and palmar grasp reflex, both of which involve finger flexion;

2. Automatic walking reflex and asymmetric tonic neck reflex, both of which involve movements of the lower limbs, in which flexion of one limb is coordinated with extension of the other; and

3. Babinski reflex and plantar grasp, both of which involve movements of the toes, although one is an extension and the other a flexion.

All three pairs of movements that shared a motor neuron pool showed positive association of asymmetries. For example, newborns with right-biased spontaneous fisting also had a right-biased palmar grasp reflex.

Sex differences in asymmetries among newborns

Although the majority of newborns we studied had elicited reflexes and spontaneous movements that were generally stronger and more coordinated on the right side than on the left side, most newborn males (61 percent) were left biased in their foot and leg movements (i.e., distal lower-body reflexes: plantar grasp, Babinski, and placing reflexes).[3] This sex difference could indicate either a temporary or a permanent sex difference in central nervous system organization.

At birth, male babies lag 4-6 weeks behind females in neuro-motor development.[7,20] As noted above, neurological maturation of movement behavior proceeds from the upper to the lower body and from the proximal regions to the distal.[17,18] We observed left-bias only in the least mature movement behaviors (i.e., lower-distal) of newborn boys. This suggests that the left bias of the least mature movement behavior in males is transient, reflecting only a sex difference in overall rate of development. More specifically, this suggests that within 4-6 weeks, the movements of male babies will become as right biased as female babies' movements are at birth.

However, the sex difference in distal lower-body reflexes among newborns parallels a sex difference in adults. Men are more likely than women to be left-biased, particularly in the lower extremities[9]. This parallel is consistent with the hypothesis that it is permanent changes in central nervous system organization which are producing sex differences in asymmetry of neonatal reflexes. And neonatal reflexes form the basis for adult voluntary behavior. According to this hypothesis, the leftward bias among males could be a fixed male characteristic resulting from the effect of sex steroids on the organization of the subcortex and spinal cord. (In animals and humans, the left cortex is smaller and functionally less developed in males than females[21,22,23], suggesting that testosterone slows the development of the left cortex.)

Sex differences persist

To determine whether the sex differences in distal lower-body reflexes of newborns are transient or permanent, we kept on watching babies as they developed. To our knowledge, no one else has examined newborns and followed their asymmetric motor development month by month. And certainly no one has looked for sex differences in asymmetric movement patterns at this young an age, despite ample documentation that sex hormones are high both during fetal development and for the first few months after birth.[24,25,26,27]

We found that the sex difference in lower-distal reflexes is **not** transient.[28] Male infants' movements within 4-6 weeks did **not** become as right-biased as the females' had been at birth. This finding suggests that whatever perinatal factors affect the organization of newborn behavior may also have long-term consequences for the development of adult lateralized behavior, including voluntary movements such as dance.

Perinatal complications, left-handedness, and perinatal sex hormones

Other researchers have found that perinatal complications, such as hypoxia, are associated with abnormal asymmetry among infants,[29,30] as well as with left-handedness among adults.[31,32] And although the association has not always been replicated[33,34], researchers have nonetheless continued to propose that left-handed behavioral asymmetry is the abnormal, even pathological result of perinatal complications.[32,35] Since left-handedness is a behavioral asymmetry which is more common among males than females[9] and is also associated with perinatal complications[32], researchers typically interpret males' tendency toward left-handedness in terms of male vulnerability during development.[9]

We also found an association between labor complications and left-biased asymmetry among male new-

borns.[40] Specifically, left-biased asymmetry among males was associated with a prolonged active phase of labor. There are alternative explanations for this association. The traditional interpretation proposes that labor complications are associated with fetal hypoxia, which may damage the neural mechanisms underlying asymmetric action, especially in males, who may be at greater risk for disrupted neural development. Our work, however, strongly suggests an alternative explanation. Prenatal sex steroids of the fetus may affect the sexual differentiation of neural mechanisms underlying behavioral asymmetry of the infant and, in addition, disrupt uterine function during labor. From this perspective, atypical behavior found more commonly in males (such as left-handedness or reading disability) may represent extremes of normal hormonally-mediated development, rather than birth asphyxia or trauma. This view has broad implications for our understanding of both the causes of normal individual differences in behavioral development and the etiology of developmental disorders.

Our data simply do not support the conclusion that prolonged labor disrupts behavioral development to produce left-biased behavior. If left-biases among males represent disrupted behavior, we would have to conclude that 61 percent of the newborn males we sampled were abnormal, and we have no reason to believe that this would be the case in a normal newborn nursery. In addition, we did not find an association between fetal hypoxia (which would presumably mediate the effects of prolonged labor) and behavioral asymmetry.

Since there are sex differences in the incidence of left-biased behavior, both in our neonatal data and in the literature on adults, we feel that a more reasonable interpretation of the correlation between labor complications and behavioral asymmetry focuses on the influence of perinatal sex hormones. We suggest that perinatal sex hormones of the fetus produce sex differences in behavioral development prenatally and, in addition, disrupt uterine function during labor. Individual differences among males' asymmetry could also be explained by variation in sex hormones.

Support for the hormonal hypothesis

Two bodies of literature support our hormonal hypothesis. First, many animal studies clearly demonstrate that steroid hormones organize the central nervous system during critical or sensitive periods of development.[37,38,39] Therefore, some researchers suggest that sex differences in steroid hormones produce sex differences in neuroanatomical asymmetry of human fetuses and functional asymmetry in later development.[40,41,42,43,28]

Second, the sex steroid hormones that affect CNS development in the fetus also affect uterine function in the mother.[44,45,46] Given the correlation between behavioral asymmetry and labor complications, these findings suggest that the same steroid hormones could cause both behavioral asymmetry in the fetus and disrupted labor in the mother. Variations in levels of these hormones could account for both group differences in behavioral asymmetry between the sexes and individual differences among males and among females.

We are currently measuring the fetoplacental and maternal sex hormones that are likely mechanisms for the sex difference in behavioral asymmetry and may also be the causal factors underlying the association between behavioral asymmetry and labor complications.

Summary

In trying to learn more about the movement patterns of newborns — which are the building blocks for all the voluntary actions of infants, children, and adults — we have observed fascinating asymmetries in newborns' movement patterns. Most newborns had elicited reflexes and spontaneous movements that were stronger and more coordinated on the right side than on the left side. Multiple subsystems, rather than a single asymmetric system, appeared to control asymmetric action of different body regions in the newborn. There were sex differences in asymmetry of the distal lower-body movement behaviors that parallel the adult pattern. These sex differences persisted over the first three months of life, suggesting that the asymmetric bias with which an infant is born persists and is probably incorporated into voluntary movement asymmetries. The left-biased movement asymmetry among males was associated with prolonged and difficult labor. However, we have reason to believe that this sex difference in behavior was not the result of birth trauma, but rather the result of hormones which organized sex differences in neural mechanisms of behavioral asymmetry and also disrupted uterine function during labor. Our current research is designed to explore this hypothesis.

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Publications:

A Welcome for Every Child: Care, Education, and Family Support for Infants and Toddlers in Europe (1994) - Sheila B. Kamerman and Alfred J. Kahn (ZERO TO THREE/National Center for Clinical Infant Programs, 2000 14th Street North, Suite 380, Arlington, VA 22201) $10.00 plus $4.00 shipping and handling.

This report describes exemplars and cutting-edge policies and programs in child care and family support in Denmark, France, Italy, Finland, and England. The materials derive from a broader research project by Professor Kamerman and Professor Emeritus Kahn, who are co-directors of the Cross-National Studies Research Program at the Columbia University School of Social Work.

Kamerman and Kahn note that child care and family support services directed at children under age 3 are increasing and changing character in Europe. These changes represent societal responses to the increasing number of mothers of very young children in the work force; the growing social isolation of families with infants and toddlers; and public awareness of the importance of offering even the very youngest children cognitive stimulation and socialization with peers and adults, whether or not there is a parent at home during the day.

Where a consensus has developed in European countries about what very young children and their parents need, the vision goes beyond child care for the children of working parents or "deficit model" programs designed for children or families "at risk." The policy goal, rather, is to respond to a broader (and universal) set of cognitive, social, physical, and psychological needs, and so to move toward a more holistic "policy for the under-3s." In this context, child care and family support services are emerging as a comprehensive and integrated service system for young children and their families.

In considering the implications of the European experience for United States policy and practice, Kamerman and Kahn observe that paid and job-protected maternity/parental leaves are universal and Europe. They also note that European child care is expensive but heavily subsidized; parent fees for child care constitute less than 10 percent of the average income of families with children in the study countries.

In addition to reporting on the supply, quality, costs, financing, staffing, and curriculum of child care and family support programs for infants, toddlers, and their families in Europe, *A Welcome for Every Child* offers detailed descriptions of daily activities in exemplary programs in Denmark, France, Italy, and England.

Coping in Young Children: Early Intervention Practices to Enhance Adaptive Behavior and Resilience (1994) - Shirley Zeitlin and G. Gordon Williamson (Paul H. Brookes Publishing Company, P.O. Box 10624, Baltimore, MD 21285) $36.00.

The more effectively a child copes, the more effectively a child learns. The more effectively families are able to cope with the demands of daily living, the more able they are to provide support and nurturance and to achieve a sense of well-being. These research-supported assumptions underlie *Coping in Young Children*, which presents a validated frame of reference for planning and implementing early intervention services that was developed during the COPING Project, a model demonstration and later outreach training program funded by the U.S. Department of Education. From this perspective, the primary goals of intervention are to enhance the child's developmental capabilities and coping behaviors and to promote a good fit or congruence between the child's coping resources and environmental demands and expectations.

This book describes adaptive functioning in young children and the transactional coping process as it occurs throughout the lifespan (see *Zero to Three*, June/July, 1994) in individuals and in family systems. Zeitlin and Williamson then offer a collaborative decision-making model for assessment and planning, and intervention options designed to expand coping resources and support effective transactions in daily living. Three intervention options, typically addressed simultaneously, are: 1) modifying demands so that they are congruent with the child's capabilities to manage them; 2) enhancing internal and external coping resources; and 3) providing appropriate, contingent feedback to the child's coping efforts.

The book describes specific intervention strategies and activities; offers guidelines for developing "an IFSP with a coping perspective"; discusses factors that contribute to staff coping; describes the experiences of four families in the COPING Project and the experience of a parent support group; and discusses the developmental process of the COPING Project itself.

Pathways to Independence: Orientation and Mobility Skills for Your Infant and Toddler (1989) - Barbara O'Mara (The Lighthouse, National Center for Vision and Child Development, 111 East 59th Street, New York, NY 10022) $2.50 Bulk discounts available. Also available in Spanish.

Addressed to parents, this publication offers games and activities that can be integrated into daily routines to help visually impaired children develop some basic orientation and mobility skills as early as the first year. Topics addressed include: encouraging the child's desire to reach out and explore; helping the child develop the senses available to her; developing a sense of body image; gross motor development; experiences to foster the development of concepts of space;

environmental landmarks and cues; and encouraging independent mobility at home, including teaching "protective techniques."

Young, Poor, and Pregnant: The Psychology of Teenage Motherhood (1993) - Judith S. Musick (Yale University Press, P.O. Box 209040, New Haven, CT 06520-9040) $27.50.

"Mother love: you can't give it if you need to get it yourself." This observation might be the "sound bite summary" of a book which focuses primarily on the psychology of adolescent motherhood but also emphasizes the social and economic roots of that problem. As a "practitioner-scholar," Musick draws on data from large-scale research studies and on qualitative sources, including interviews with adolescent mothers and community-based service providers, videotapes and observations,diaries and journals of an ethnically diverse group of adolescent mothers.

Observing repeatedly the phenomenon of "failure at the moment of potential growth" (often expressed by a new pregnancy) among adolescent mothers, Musick notes that:

For poor adolescents, like all adolescents, positive change comes about only when developmental readiness meshes with realistic opportunities to succeed in personally valued roles and areas of competence... Positive change takes place where adolescents can master new knowledge and skills within the context of strong, repeated, emotionally salient experiences with people they trust and admire...(who) have strong expectations as well (p. 233).

Musick calls for community-based programs in which skilled, self-aware staff are prepared to address all the domains of adolescent mothers' lives — including sexual behavior and values, sexual exploitation, relationships with men, childrearing practices, and family violence.

Lives of Promise, Lives of Pain: Young Mothers after New Chance (1994) - Janet C. Quint and Judith S. Musick, with Joyce A. Ladner (Manpower Demonstration Research Corporation, Three Park Avenue, New York, NY 10016) $12.00 plus $3.00 shipping and handling

This monograph reports the findings of a study based on interviews with 50 young mothers who participated in a national research and demonstration program called New Chance which aims to increase the employment, economic self-sufficiency, and general well-being of young women on AFDC who are high school dropouts, and to enhance the learning and development of their children as well. During the program's demonstration phase, which began in 1989 and concluded in 1992, New Chance was operated by community-based organizations, schools, a community college, and municipal agencies at 16 locations in 10 states across the country and enrolled over 1,550 young women.

The key findings of this study concern the heterogeneity of the young women, their slow progress toward self-sufficiency (most of the 50 young mothers were still receiving public assistance when interviewed 30 months after leaving New Chance), and the salience of their interpersonal issues and needs. Economic and psychological support (or the lack thereof) from family members and partners played a crucial role in the young women's lives. Growing up in an especially disorganized family had lasting negative consequences for an number of young women — and for their young children.

In discussing implications and recommendations for strengthening programs for young mothers, the authors note the crucial importance of: skilled and trained staff; preparing young people for the culture of the workplace (and for discrimination); providing additional supports to college attenders; ongoing contraceptive counseling; testing the benefits of providing counseling and continued assistance as young people make critical decisions; testing alternative approaches to help more disadvantaged, less successful participants; and high-quality, low-cost child care and back-up child care.

Videotapes:

Normal Development of Walking. Produced by Janet L. Hale, B.Sc.(PT), M.Sc. for IMS Creative Communications. Distributed by Therapy Skill Builders, 3830 E. Bellevue/P.O. Box 42050, Tucson, AZ 85733, tel: (602) 323-7500. 13 minutes. Viewer's guide included. $79.

During the first two years of life, the child progresses from an infant unable to maintain the head in a controlled position to an adventurous toddler able to get into everything and go anywhere. This video program, with extensive footage of infants and young children, shows the many complex stages in early development of the motor skills that comprise walking.

This tape is designed to assist the viewer in comparing an individual child's gait to normal developmental stages; educate parents about the developmental stages necessary to walking; and give students a visual understanding of locomotion development.

This program highlights the qualitative and quantitative changes which occur during the maturation of walking. In learning to walk, the child develops muscle strength, control, coordination, and balance, which form the basis for all subsequent motor achievements. Although the exact chronological age at which each stage is achieved varies widely among normally developing children, the process is the same. The tape demonstrates and analyzes features of walking at various stages of development; these features include speed, length of step and stride, pelvic span to ankle spread ratio, flexibility at the knee, the ratio of stance-to-swing phases, arm motion, hip motion, and the function of feet. This analysis of normal development is presented as a basis for understanding problems of locomotion in children, both congenital and acquired.

Letters to the editor

I read Sharon Kagan and Peter Neville's article, "Parent Choice in Early Care and Education: Myth or Reality" in *Zero to Three*, February/March 1994, with a great enthusiasm for their attempt to address the complexity involved in determining what constitutes parents' "choice" when selecting child care arrangements. I agree with their conclusion that most parents are presented with a very limited range of child care options to choose from. However, I was disappointed that they did not address the role of the work place in limiting those options. In the section on system reform I hoped to see an examination of why we allow the needs of the employer to take precedence over the needs of the child. I am afraid that too often parents' child care arrangements are determined not by the parent's sensitivity to their child's needs but rather by the demands placed on them by their employer, among them optimal productivity, a goal which may be at odds with the developmental needs of the young child and her family.

I have repeatedly observed an industry being praised by professionals involved in the care of young children for its efforts to provide quality child care settings for its employees. The recipient talks about investing in child care as a benefit for *industry* because it allows mothers to return to the paid work place sooner, miss fewer work days due to child care complications, and because it fosters a sense of loyalty in the employee. Not mentioned are the changes needed in the parents' work schedules so that the children may utilize these resources to meet their individual needs. For example, infants may do best if their parents worked a 20-hour week, preschool children may do well with their parents working a 30-hour work week, and parents of school age children a 35-hour work week.

As a mental health professional, I have spent the past ten years examining the ways in which children's relationships at home are related to their relationships in the child care setting and the parents' work. Numerous studies have demonstrated the relationship between parents' satisfaction with their child care decisions, their mother's mental health (Leventhal-Belfer, Cowan, & Cowan, 1992; Silverstein, 1991), and the child's development (Scarr, 1991).

As an infant mental health consultant to The Child Care Outreach Program and a Therapist in the Therapeutic Parent-Preschool Child Program at the Children's Health Council, I am frequently consulted about the dilemma which parents, especially mothers, face when forced to choose between their paid job and more desirable child care alternatives. A significant number of the children under age six that we see at the Children's Health Council are referred for an evaluation due to the child's poor adaptation to their child care arrangements. One of our frequent recommendations from the Infant-Preschool Diagnostic Team is that the child would benefit from more time with his primary caregivers and reduced hours in alternative child care settings because of the demands being made on the child during an 8-hour day. Yet we are forced to accept that this is not an option for the majority of today's parents. For most, part-time work is either not available or involves lesser pay with neither job security nor health care benefits.

By quitting a job, the family may forfeit crucial benefits, such as health insurance or income the family depends on to meet monthly bills, particularly if their child needs special services such as speech and language therapy, occupational therapy, mental health services. Equally important, the paid work may be a source of support, personal satisfaction, and intellectual challenge, all factors which may contribute to a parent's mental health, adult development, and relationship with their child and, in turn, their child's development. However, with the current lack of options, suggesting a reduced work load is interpreted by most mothers as meaning that maternal employment is bad for infants and preschool children. In the face of this, I believe that we must place more direct pressure on industry and employers to provide parents with work options which are attentive to the children's developing needs.

In summary, I believe that it is not sufficient to look at the ways in which parents can become more involved in the early care and educational programs they choose for their child without examining the ways in which the work place fosters or penalizes these parents for making child oriented decisions. If we are to believe that families must be the primary constituency and voice for early care and education, as Kagan and Neville so strongly suggest, then we must also take a more active role in demanding work and child care options at least as sensitive to the needs children as those of industry. If not, I fear that we will have lost sight of many of our children's individual needs with potentially very high cost to our society's future productivity and mental health.

Laurie Leventhal-Belfer, Ph.D.,The Children's Health Council; Palo Alto, California

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Silverstein, L. (October, 1991). Transforming the debate about child care and maternal employment. *American Psychologist*, 46, (10), 1025-1032.

I am writing this letter per Linda Gilkerson's request for a follow-up to her article "Supporting Parents in Leadership Roles" in the February/March 1994 issue of *Zero to Three*. It is important to recognize that Linda's article was

the end product of a collaborative activity of Illinois State Interagency Council on Early Intervention's Family Support Committee. Last winter, she wrote a short position paper "On Preventing Parental Exhaustion" and submitted it to participants in the Family Support Committee for review and feedback. I submitted a written response, which was discussed at a committee meeting and which helped to shape Linda's response. The process of what transpired is a valuable example — and an easily replicable model — of parent-professional partnership in policymaking.

Due to the fact that I am a professional who was trained in the "child-centered" old days and had worked as a special educator, counselor and administrator before becoming the parent of a child with special needs, I have a somewhat unique perspective on parent-professional relations. Since giving birth to my daughter, moreover, I have never ceased to be amazed by the professionals who allude to the fact that my graduate degree in special education somehow qualifies me to be a superlative parent of a child with multiple disabilities, one who could not possibly need any type of family support services but is always available for volunteer assignments. My twelve years of parenting experience have shown me that virtually the only overlap with my graduate schooling is the ability to do extensive library research related to my daughter's special needs.

I am greatly encouraged that the policy-making arm of our service delivery systems has finally made great strides in the inclusion of family members and consumers in their activities although certainly not to the greatest extent possible. Unfortunately, in all too many cases, the system that delivers the services still has not become family-centered to any significant degree. It is exceedingly difficult to expect families to make themselves more available for leadership and policy-making roles, when the very configuration of the service delivery is the antithesis of the program's avowed philosophy. Family-centeredness must exist in deed as well as in word. To my dismay, I still frequently confront barriers erected by service providers (in early intervention as well as in other areas) in terms of services that continue to be center-based during weekday business hours only, with no transportation or childcare supports.

This state of affairs really hit home when a "fortysomething" colleague of mine, recently remarried, gave birth to a son with Down syndrome. Despite her residence in a major metropolitan center and her many years of involvement and advocacy on behalf of her adult son with a developmental disability, she was forced to quit her job in order for her family to access needed services for their newborn son. In 1994 Chicago, she could find absolutely no appropriate homebound services nor services available on evenings or weekends which would have permitted her to continue her employment.

In order for us to fulfill our commitment to shared leadership with families, we must first make sure that our service delivery system is family-centered. Continuation of the traditional medical-model/child-centered system is a major stressor for families, one that drains their energy and lessens their availability for leadership and policy-making activities.

Linda Gilkerson's openness to seeking out parental collaboration serves as a powerful role model for us all. We need to emulate her example in our own matrices of service delivery, policy-making and professional development activities. We seem to be functioning pretty well in this regard at the national level, so we need now to shift our focus to regional and local involvement. A great challenge and a great opportunity await each of us. Our children's future can only be optimized by the quality of our family-professional collaboration in service delivery, administration, policymaking, and advocacy.

Faye Manaster Eldar; Skokie, Illinois

Conference Call:

December, 1994

December 1-4: *ZERO TO THREE/National Center for Clinical Infant Programs* will hold its Ninth National Training Institute in Dallas, Texas, with the theme "Frontiers and Front Lines in Infant/Family Practice, Policy, Research, and Training." Plenary speakers will include Isaura Barrera, Elizabeth Bates, Sonya Bemporad, T. Berry Brazelton, Tiffany Field, Stanley Greenspan, Marshall Haith, Marva Lewis, Beverly Roberson Jackson, Dolores Norton, Joy Osofsky, Jeree Pawl, Deborah Phillips, Kyle Pruett, Arnold Sameroff, and Jack Shonkoff. For information contact ZERO TO THREE-NTI, tel: (703) 356-8300, fax: (703) 790-7237.

January, 1995

January 11: The *Hawai'i Early Intervention Coordinating Council* will present the sixth annual early intervention conference in Honolulu, Hawai'i on the theme, "Charting Our Course into the 21st Century." Family-professional presentations will be featured. Contact Dr. Jean Johnson or Kris Takekawa, ZERO-TO-THREE HAWAI'I PROJECT, 1600 Kapi'olani Blvd, #1401, Honolulu, HI 96814, tel: (808) 957-0066, fax: (808) 946-5222.

Call for proposals:

Abstract submissions are invited for poster presentation at **Child Health 2000, World Congress and Exposition on Child Health**, to be held in Vancouver, Canada, May 30 to June 3, 1995, co-sponsored by the Global Child Health society and the University of British Columbia. Poster topic categories include global child health, major children's issues, health care, maternal health, and science and technology. **The deadline for receipt of abstracts is November 30, 1994.** For an abstract form, contact CHILD HEALTH 2000, 113-990 Beach Avenue, Vancouver, B.C., Canada V6E 4M2, tel: (604) 682-6008, fax: (604) 682-6771.

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